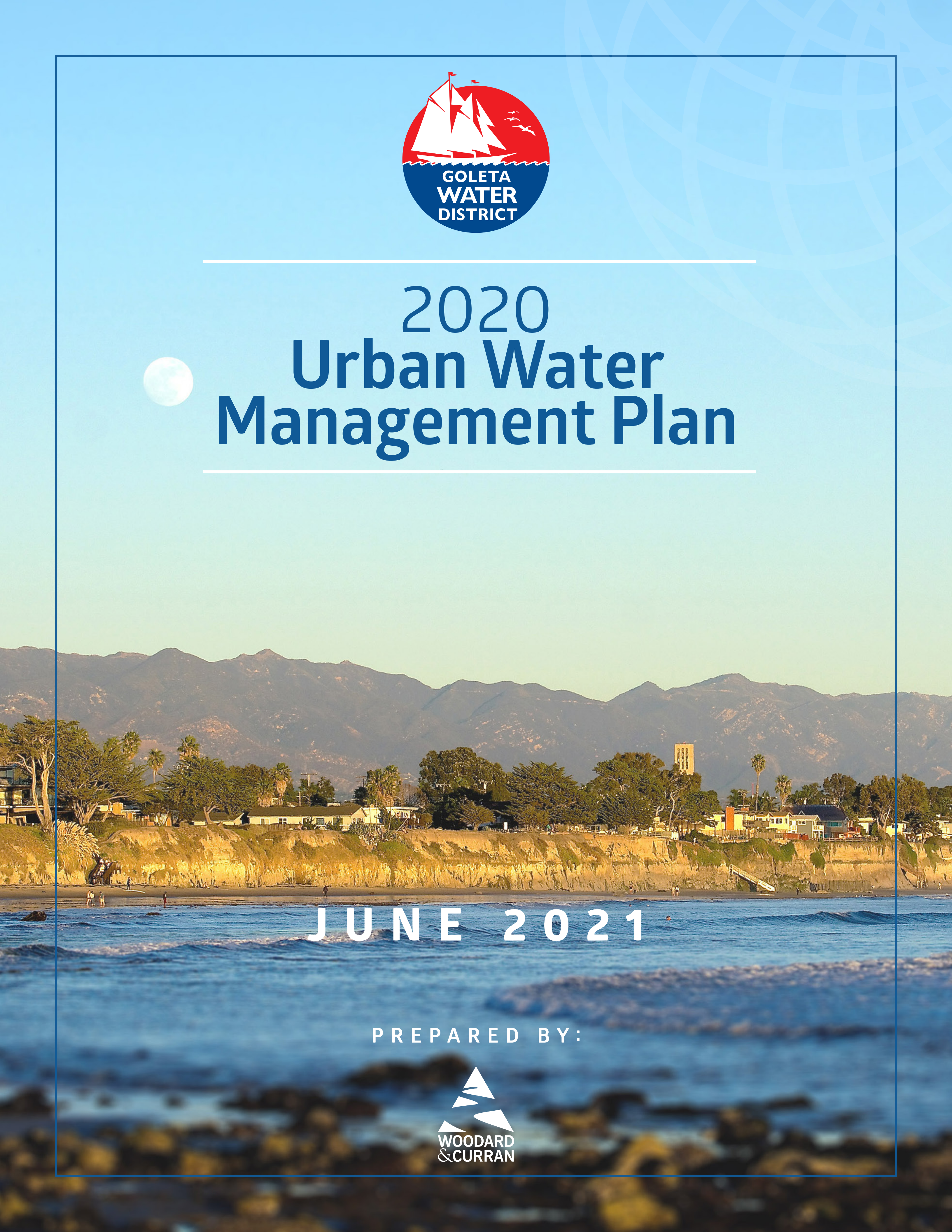

GOLETA WATER DISTRICT

2020 Urban Water Management Plan

JUNE 2021

PREPARED BY:

WOODARD & CURRAN

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GOLETA WATER DISTRICT

Mission

To provide a reliable supply of quality water at the most reasonable cost to the present and future customers within the Goleta Water District

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Acknowledgements

Goleta Water District

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Table of Contents

SECTION **PAGE NO.**

TABLES

FIGURES

APPENDICES

LIST OF ABBREVIATIONS

Act	California Urban Water Management Planning Act
AF	acre feet
AFY	acre feet per year
ASR	aquifer storage and recovery
AWWA	American Water Works Association
BMP	Best Management Practice
CAFR	Comprehensive Annual Financial Report
CalWEP	California Water Efficiency Partnership
CCMB	Central Coast Management Board
CCR	Consumer Confidence Report
CCWA	Central Coast Water Authority
CCWB	Central Coast Water Board
CDM WTP	Corona Del Mar Water Treatment Plant
CII	commercial, industrial, and institutional
CIMIS	California Irrigation Management Information System
CLUP	County Land Use Plan
COMB	Cachuma Operation and Maintenance Board
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
DCR	Delivery Capability Report
Delta	Sacramento-San Joaquin Delta
DMM	Demand Management Measure
DWR	Department of Water Resources
EPA	Environmental Protection Agency
ETo	evapotranspiration
GIS	geographic information system
GPCD	gallons per capita per day
GSD	Goleta Sanitary District
GWD	Goleta Water District
GWSD	Goleta West Sanitary District
HCF	hundred cubic feet
ID#1	Santa Ynez River Water Conservation District Improvement District #1
LCMWC	La Cumbre Mutual Water Company
MG	million gallons
MGD	million gallons per day
MOU	memorandum of understanding
MSL	mean sea level
NMFS	National Marine Fisheries Service

PPIC	Public Policy Institute of California
SAFE	Safe Water Supplies Ordinance
SBCAG	Santa Barbara County Association of Governments
SBX7-7	Water Conservation Act of 2009
SGMA	Sustainable Groundwater Management Act
SRP	Stormwater Resources Plan
SWP	State Water Project
TDS	total dissolved solids
UCSB	University of California Santa Barbara
UWMP	Urban Water Management Plan
USBR	United States Bureau of Reclamation
WRCC	Western Regional Climate Center
WSCP	Water Shortage Contingency Plan
WTP	water treatment plant
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY

The Goleta Water District (GWD or District) has prepared this 2020 Urban Water Management Plan (UWMP) in accordance and compliance with the Urban Water Management Planning Act (UWMP Act). GWD's 2020 UWMP serves as the long-term planning document that will help to ensure the District can provide its customers with reliable water supplies through 2040. Pursuant to the requirements of the California Water Code (CWC) 10630.5, this Executive Summary provides a simple lay description of the information needed to provide a general understanding of this 2020 UWMP and includes a description of the District's reliable water supplies, anticipated challenges, and strategies for managing system reliability risks.

ES.1 INTRODUCTION

Preparation of an UWMP is required by the California Department of Water Resources (DWR) for all urban water suppliers within the State of California. Urban water suppliers are defined as publicly or privately owned water suppliers that provide water for municipal purposes, either directly or indirectly, to more than 3,000 customers or supply more than 3,000 acre-feet (AF) of water annually. UWMPs must meet requirements established by the CWC and the Urban Water Management Planning Act (Act).

This report constitutes the *2020 Urban Water Management Plan* for GWD, which must be adopted by the GWD Board of Directors and submitted to DWR by July 1, 2021. This 2020 UWMP satisfies the requirements of the CWC, the Act, and subsequent amendments.

ES.2 DISTRICT SETTING

GWD is located in the South Coast portion of Santa Barbara County. The service area encompasses approximately 29,000 acres and provides water service to approximately 84,500 residents. GWD serves water to the City of Goleta, the University of California Santa Barbara (UCSB), and Santa Barbara Airport; the remainder of GWD is in the unincorporated portion of Santa Barbara County. LCMWC is located within the GWD service area, but manages its own supplies, facilities, and customers, and is not served by GWD.

The climate in GWD's service area is generally characterized as Mediterranean coastal: summers are mild and dry, and winters are cool. The average temperature is 59 degrees Fahrenheit. Average rainfall is about 16 inches per year. The area is subject to wide variations in annual precipitation. For example, the area received only 5.6 inches of rain in 1990 but received over 45 inches of rain in 1998.

Land use in the Goleta Valley is typical for coastal communities in California. In the late 19th century, the Goleta Valley was originally developed as a prominent agricultural region. Over time, intensive land uses developed in the region and resulted in the conversion of some prime agricultural and rural land into diverse urban communities. The land use in the service area is now primarily residential, though it includes a variety of institutional and commercial land uses. Land use in GWD's service area is expected to generally sustain the continued growth of residential, commercial, and institutional developments.

ES.3 SYSTEM WATER USE

Population projections are often one of the main components used to project future water demand. GWD has an estimated current service area population of about 84,500, and it is projected that the population will increase to about 89,600 residents by 2040. Approximately 38 percent of GWD's population resides within the City of Goleta. Population growth within the service area may result in increased water demands in the future.

GWD's historical water demands have varied from year to year, which can be attributed to annual variations in weather and droughts, economic conditions, land use policies, changes in technology, and water costs. GWD's 2020 potable and raw water deliveries were comprised of 53 percent residential, 24 percent agricultural irrigation, 19 percent commercial and institutional, and 4 percent landscape irrigation (comprised of dedicated irrigation meters). Between 2020 and 2040, total potable demands are projected to increase by 1,035 acre feet per year (AFY) from 10,000 AFY to 11,035 AFY (excluding water losses). **Table ES-2** shows historical, current, and projected water demand by use sector.

Table ES-2: Historical, Current, and Projected Water Demand

Water Use Sector	2015	2020	2025	2030	2035	2040
Single Family	3,251	3,509	3,254	3,300	3,354	3,407
Multi-Family	1,636	1,814	1,899	1,927	1,957	1,989
Commercial	1,790	1,494	1,700	1,856	1,986	2,056
Institutional	543	399	800	1,010	1,010	1,010
Landscape	331	433	445	445	445	445
Agricultural irrigation	3,160	2,351	2,128	2,129	2,129	2,128
Losses	(a)	(a)	640	658	680	702
Total	**10,711**	**10,000**	**10,866**	**11,325**	**11,561**	**11,737**

Note: a) Values for system losses were not available for years 2015 and 2020.

Estimated water losses between 2016 and 2020 were approximately six percent of the total average potable and raw water demand. Senate Bill (SB) 555 directed the State Water Resources Control Board (SWRCB) to develop performance standards for volumetric water loss by July 2020. Based on the State's draft performance standards for volumetric water loss, GWD is within its long-term targets.

ES.4 BASELINES AND TARGETS

All urban water suppliers in California are mandated by the Water Conservation Act of 2009 (also referred to as SBx7-7) to reduce per capita potable water demands by 20% by the year 2020. For 2020, the GWD was required to have a per capita water use (measured in gallons per capita per day [GPCD]) of 111 GPCD. GWD's actual potable water demands for 2020 were 100 GPCD, which is well below the 2020 target. Reduced demands in GWD's service area are likely the result of ongoing conservation programs that have been implemented in response to the SBx7-7 legislation, as well as demand hardening from enhanced conservation implemented in response to the most recent multi-year drought and associated state-mandated emergency conservation requirements. The GWD has therefore met its 2020 water use target of 111 GPCD. **Table ES-3** provides a summary of the calculated baseline and water use targets for the 2020 Plan.

Table ES-3: Baselines and Targets Summary

Baseline Period	Start Year	End Year	Average Baseline GPCD	Confirmed 2020 Target	2020 GPCD	Did Supplies Achieve Target Reduction for 2020?
10-15 year	1995	2004	127	111	100	Yes
5 Year	2004	2008	117			

ES.5 SYSTEM SUPPLIES

GWD's current water supplies include local surface water from the Cachuma Project, imported water from the State Water Project (SWP), local groundwater from the Goleta Groundwater Basin, and non-potable recycled water. The Cachuma Project captures seasonal flows from the Upper Santa Ynez River system, which originates in the San Rafael Mountains in the Los Padres National Forest. Potable supplies from the Cachuma Project are treated at the Corona Del Mar Water Treatment Plant (CDM WTP). Imported supplies from the SWP are conveyed to Lake Cachuma through the Central Coast Water Authority (CCWA) system, and supplies are combined with the Cachuma Project water in Lake Cachuma. Groundwater is also extracted from the North and Central subbasins in the Goleta Groundwater Basin via seven fully operational groundwater production wells. GWD also serves recycled water produced by the Goleta Sanitary District (GSD) produced at the Goleta Wastewater Treatment Plant (WWTP).

In 2020, the GWD supplied 606 AF of imported water from the SWP, 9,389 AF of local surface water from the Cachuma Project, 822 AF of groundwater from the Goleta Groundwater Basin, and 729 of recycled water from the Goleta WWTP.

GWD continues to increase local supply reliability and offset demands for imported water by an active aquifer storage and recovery (ASR) Program through which water is injected into the basin for recharge and storage during wet years and extracted to serve customers in dry years. To support local supply diversity and reliability, GWD also developed a Potable Reuse Facilities Plan in 2017 to identify expanded recycled water opportunities beyond existing non-potable use GWD, and a Stormwater Resources Plan (SRP) for the purpose of identifying supply augmentation potential from various stormwater capture projects within GWD. **Table ES-4** provides a summary of GWD's projected water supplies from 2025 through 2040.

Table ES-4: Summary of Projected Supplies (AFY)

Water Supply	Additional Detail on Water Supply	Reasonably Available Volume			
		2025	**2030**	**2035**	**2040**
Groundwater	Goleta Groundwater Basin	2,350	2,350	2,350	2,350
Recycled Water	Goleta WWTP	768	772	772	772
Surface Water	Cachuma Project Water	9,322	9,322	9,322	9,322
Purchased or Imported Water	State Water Project	3,800	3,800	3,800	3,800
Total		**16,240**	**16,244**	**16,244**	**16,244**

As part of this UWMP, GWD estimated its water services' operational energy intensity using the best available information to identify energy savings opportunities, calculate greenhouse gas (GHG) emission reductions associated with the GWD's water conservation program, and identify potential opportunities for receiving energy efficiency funding. The energy required for conveyance, extraction, treatment and distribution of water to the GWD service area is estimated at 511 kilowatt hours per acre foot (kWh/AF) for retail potable deliveries and 101 kWh/AF for retail non-potable deliveries.

ES.6 RECYCLED WATER

Recycled water service within Goleta began in 1994 in response to drought conditions of the early 1990s, and the Wright Judgement and resulting limitations on GWD groundwater pumping. Wastewater from the Goleta West Sanitary District (GWSD) and the GSD is treated at the GSD WWTP. The existing recycled water system can produce up to 3,000 AFY of tertiary effluent for recycling.

Currently, GWD delivers recycled water for landscape irrigation uses as well as a minor amount for toilet flushing. In 2020, approximately 729 AF was recycled within the GWD service area, and 147 AF used for in-plant processes. Over the last 20 years, the amount of recycled water produced and delivered has remained relatively constant. Based on known recycled water projects, recycled water demand is projected to increase by approximately 43 AFY from 729 AFY in 2020 to 772 AFY in 2030. To support local supply diversity and reliability, GWD developed a Potable Reuse Facilities Plan in 2017 to identify expanded recycled water opportunities beyond existing non-potable use. GWD actively explores opportunities and local partnerships to identify projects that fully use and increase the long-term viability of recycled water as a permanent supply source for the Goleta Valley in the most efficient way.

ES.7 WATER QUALITY

The quality of any natural water is dynamic in nature. This is true for the SWP, local surface water, and local groundwater. Surface water quality can be affected during periods of intense rainfall or snowmelt which causes changes in the routes of surface water movement. These changes can result in the mobilization of new constituents that then enter the water, and the reduction or elimination of other constituents. Water quality at Lake Cachuma is also impacted by seasonal mixing and stratification and by biological activity, especially algae blooms. Water supplies from Lake Cachuma and the SWP are treated at GWD’s CDM WTP.

In urban environments, groundwater quality can be influenced by the release of chemicals to the environment such as those used in agricultural fertilizers and pest control. Depending on water depth, groundwater will pass through different layers of rock and sediment and introduce different substances from those materials that can change water quality. When groundwater levels are low, the mineral concentration of groundwater generally increases, also resulting in degraded water quality.

As required by the Safe Drinking Water Act, GWD provides annual Water Quality Reports to its customers, also known as Consumer Confidence Reports (CCR). The purpose of the CCRs are to inform customers of their drinking water quality. In accordance with the Safe Drinking Water Act, GWD monitors regulated and unregulated compounds in its water supply. Water delivered to GWD potable customers consistently meets the standards required by the state and federal regulatory agencies.

Based on current conditions, GWD does not anticipate any significant or immediate changes in its available water supplies due to water quality. However, water quality issues are constantly evolving. GWD will act to protect and treat supplies when needed, but it is well recognized that water quality treatment can have significant costs.

ES.8 WATER SUPPLY RELIABILITY

This 2020 UWMP presents the GWD’s water reliability assessments from 2025 through 2040. Consistent with the UWMP Act requirements, each assessment compares total projected water supply to total projected water demands in five-year increments over the next 20 years under the following scenarios:

- Normal water year
- Single dry-year
- Multiple dry-year

GWD projects increased demands (as weather conditions get hotter and drier) during single and multiple dry year scenarios. However, GWD's water supply reliability analysis shows that supplies will meet demands under all hydrologic scenarios from 2025 through 2040.

The amount of Cachuma Project water delivered to member units varies from year to year and is vulnerable to drought conditions. For the first time in history, GWD received a zero percent (0%) allocation of Cachuma water for the 2015-16 water year due to prolonged drought. Due to the uncertainty surrounding Cachuma Project availability, the reliability analysis of Cachuma Project water is based on the most recent period of local drought that occurred between 2012 and 2016 when Cachuma entitlements were consistently below average. Similarly, SWP allocations are also expected to fall below average during drought periods. In contrast, groundwater supplies from the Basin are generally reliable and resilient to drought conditions. GWD anticipates increasing groundwater production in dry years to offset reduced surface water availability. Recycled water is also considered a reliable and drought-resilient supply and there are no significant issues that may create a shortage condition for this supply source. Should GWD project potential supply deficits, GWD would implement its Water Shortage Contingency Plan (WSCP). GWD may also pursue the recommendations presented in the 2017 Water Supply Management Plan Update to reliably meet demand in drought periods.

Pursuant to a new requirement, a water supplier must also include in its 2020 UWMP a drought risk assessment (DRA) to compare supplies and demands over a five-year consecutive dry period, or extended drought. Projected SWP and Cachuma Project supplies reflect actual production from 2012-2016. All other local supplies assume no reduction in availability over the five-year period due to the drought resilience of these supplies. The analysis assumes that WSCP actions would be triggered starting with Stage I and increasing to Stage II, resulting in the ability to meet demands during the five year drought.

ES.9 WATER DEMAND MANAGEMENT MEASURES

The CWC defines "Demand Management" as water conservation measures, programs, and incentives that prevent the waste of water and promote reasonable and efficient use and reuse of available supplies. Demand management measures (DMMs) are developed and implemented for the purpose of reducing overall demand on a water supplier. Demand reductions can be achieved using several methods including water conservation, which is a relatively low-cost way to supplement water supply that is typically easy to implement.

GWD has demonstrated its commitment to water use efficiency and conservation by engaging in a variety of public education and outreach efforts to improve water use management, education, and efficiency. GWD maintains an active conservation program and is an ongoing partner in Santa Barbara County's Regional Water Efficiency Program. A strong focus on customer incentives, such as waterwise landscape rebates, courtesy customer water surveys, and a focus on public outreach activities, helps to achieve water conservation goals during periods of normal supply, and provides a foundation for reducing customer demand during water shortages. GWD's participation in these water conservation programs aided in the compliance with SB X7-7.

Goleta Water District Code Section 6.20.070, Waste of Water, prohibits customers from willfully or negligently permitting leaks or wasteful use of water. If a customer is found in violation of this section, GWD may suspend or terminate service to the customer or refuse to resume service until the customer meets certain provisions. In 2013, GWD amended the Code to add Chapter 6.21, Water Shortage Restrictions, establishing increasingly restrictive water use prohibitions during a declared water shortage, and creating additional penalties for wasteful use of water.

ES.10 WATER SHORTAGE CONTINGENCY PLAN

GWD's WSCP lays out various methods for mitigating the effects of water shortages of increasing intensity in five stages. The WSCP includes voluntary and mandatory water use restrictions designed to reduce flexible water use depending on the cause, severity, and anticipated duration of the supply shortage. The WSCP details the protocols and procedures that GWD will implement at each stage of a declared water shortage to help water users comply with the shortage response actions. The WSCP is an adaptive management plan that is designed to be responsive to the effectiveness of water shortage actions during a declared water shortage. As such, the WSCP will be adjusted and refined as needed to ensure that actions are appropriate and effective.

Beginning 2022, the GWD will prepare and submit an annual water supply and demand assessment (Annual Assessment) to DWR by July 1 of every year to evaluate actual forecasted near-term water supply conditions (for the next 12 months), followed by a dry year, and determine if a water shortage is imminent. If the Annual Assessment anticipates that demands will exceed available supply, the District's Board will vote to determine the appropriate water shortage level and associated actions necessary to reduce demand to ensure adequate supply

1. INTRODUCTION

This report presents the 2020 Urban Water Management Plan (UWMP) for the Goleta Water District (GWD or the District) service area. This section describes the general purpose of the UWMP, discusses UWMP implementation, and provides general information about GWD and its service area.

GWD is a County Water District operating pursuant to the provisions of the California Water Code. GWD was formed in 1944 to take advantage of the water supply to be developed by the Federal Cachuma Project on the Santa Ynez River. GWD initially relied on local groundwater until the Cachuma Project began making deliveries in 1955. Except for water years 2014/15 through 2017/18 (drought years), the Cachuma Project has served as GWD's primary water supply source. As described more fully in this document, GWD water supplies also include water from the State Water Project (SWP), recycled water, and groundwater.

GWD is located in the South Coast portion of Santa Barbara County with its western border adjacent to El Capitan State Park, its northern border along the foothills of the Santa Ynez Mountains and the Los Padres National Forest, the City of Santa Barbara to the east, and the Pacific Ocean to the south (Figure 1-1). The service area encompasses approximately 29,000 acres, and a population of approximately 87,000[1]. The GWD service area includes the City of Goleta, University of California Santa Barbara (UCSB), and Santa Barbara Airport; the remainder of GWD's service area is in unincorporated Santa Barbara County. La Cumbre Mutual Water Company (LCMWC) is located within the GWD service area, but has its own supply, water distribution facilities, and customers, and is not served by the GWD. Table 1-1, Table 1-2, and Table 1-3 identify GWD and provide basic information on the type of UWMP contained in this document. **All volumes of water throughout this UWMP are reported in acre feet (AF) unless noted otherwise.**

Table 1-1: DWR Table 2-1: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020
4210004	Goleta Water District	16,979	11,616

Note: The table, per State guidelines, provides information on municipal connections only (i.e., residential, commercial, institutional) and excludes agricultural customers and usage.

Table 1-2: DWR Table 2-2: Plan Identification

Select Only One	Type of Plan
☑	Individual UWMP

[1] The GWD provides water service to approximately 84,462 residents. This excludes populations within the GWD service area that are served by the La Cumbre Mutual Water Company.

Table 1-3: DWR Table 2-3: Agency Identification

Type of Agency	
☑	Agency is a retailer
Fiscal or Calendar Year	
☑	UWMP Tables Are in Calendar Years
Units ☐Measure Used in UWMP	
Unit	Acre feet (AF)

1.1 PURPOSE

An UWMP is a planning tool that generally discloses the actions of water management agencies. Every five years, water suppliers such as GWD are required to update the UWMP.[2] It provides managers and the public with a broad perspective on several water supply and demand issues. An UWMP is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that an UWMP include a section that "describes the opportunities for exchanges or water transfers on a short-term or long-term basis." (California Urban Water Management Planning Act, Article 2, Section 10630(d).) The identification of such opportunities, and the inclusion of those opportunities in a general water service reliability analysis, neither commits a water management agency to pursue a particular water exchange or transfer opportunity, nor precludes a water management agency from exploring exchange/transfer opportunities not identified in the UWMP. When specific projects are chosen to be implemented, detailed project plans are developed, environmental analysis, if required, is prepared, and financial and operational plans are detailed.

In short, this UWMP is a management tool, providing a framework for potential action, but not functioning as a detailed project development or action plan. **It is important that this UWMP be viewed as a long-term, general planning document, rather than as an exact blueprint for supply and demand management.** Specific supply and demand management strategies are recommended and implemented pursuant to the GWD Water Supply Management Plan. Water management in California is not a matter of certainty, and planning projections may change in response to several factors. From this perspective, it is appropriate to look at the UWMP as a general planning framework, not a specific action plan. **Consultation with the GWD on water availability is required for all projects**. The UWMP is an effort to generally answer a series of planning questions including:

- What are the potential sources of supply and what is the reasonable probable yield from them?
- What is the probable demand, given a reasonable set of assumptions about growth and implementation of standard water management practices?
- Do supply and demand forecasts show reasonable balance, assuming that the various probable supplies will be pursued by the implementing agency?

Using these "framework" questions and resulting answers, GWD will pursue feasible and cost-effective options and opportunities to meet demand. Specific planning efforts will be undertaken regarding each option, involving detailed

[2] California Water Code Section 10610 et seq. Water providers must prepare an UWMP if they sell over 3,000 AF of water per year or have over 3,000 service connections.

evaluations of how each option would fit into the overall supply/demand framework, how each option would affect the environment, and how each option would affect customers. The objective of these more detailed evaluations would be to find the optimum mix of conservation and supply programs to ensure the needs of GWD's customers are met.

The California Urban Water Management Planning Act (Act) requires preparation of a plan that:

- Demonstrates water supply planning over a 20-year period in five-year increments.
- Identifies and quantifies adequate water supplies, including recycled water, for existing and future demand, in normal, single-dry, and multiple-dry years.
- Implements conservation and efficient use of urban water supplies.
- Describes demand management measures and water shortage contingency plans.

A checklist to ensure compliance of this UWMP with the Act requirements and copies of all the DWR required tables are provided in Appendix A.

In short, the UWMP answers the question: Do forecasts demonstrate adequate water supplies for GWD's service area in future years, and what mix of programs could be explored for making any additional water available?

GWD's mission is to provide a reliable supply of quality water at the most reasonable cost to the present and future customers within the GWD service area. Based on conservative water supply and demand assumptions over the next 20 years in combination with conservation of non-essential demand during certain dry years, the UWMP demonstrates that GWD is likely to achieve this goal over the next five years, given prevailing conditions. Under the Safe Water Supplies Ordinance (SAFE), whereby GWD is required to consider the availability of potable water supplies available for new customers every year, the 2017 Water Supply Management Plan, and the 2016 Groundwater Management Plan, GWD is well-positioned to monitor the pace of increasing water demand against supplies, climate considerations, or other factors that could impact its ability to achieve its core mission.

1.2 IMPLEMENTATION OF THE UWMP

This subsection provides the cooperative framework within which the UWMP will be implemented, including agency coordination, public outreach, and resource maximization.

1.2.1 Agency Coordination and Public Outreach

As described earlier, GWD provides water to the City of Goleta, UCSB, the Santa Barbara airport (City of Santa Barbara property), and unincorporated portions of Santa Barbara County. These land use entities were notified of the GWD 2020 UWMP update. The District informed its wholesale suppliers, Central Coast Water Authority and Cachuma Operation and Maintenance Board, of projected water use in accordance with California Water Code (CWC) 10631 as shown in Table 1-4. Agency coordination for this UWMP is summarized in Table 1-5 and notification to cities and counties is shown in Table 1-5. Copies of notifications and submittals are included in Appendix B. Table 1-6 presents a timeline for public participation during the development of the UWMP. GWD notified agencies within its service area, including the City of Goleta, City of Santa Barbara, Santa Barbara County, and UCSB of the opportunity to provide input regarding the Plan. Copies of the public outreach materials, including website postings and invitation letters, are also included in Appendix B. The materials encourage active involvement of diverse social, cultural and economic elements of the population within the service area prior to and during the preparation of the plan.

Figure 1-1: Goleta Water District Service Area

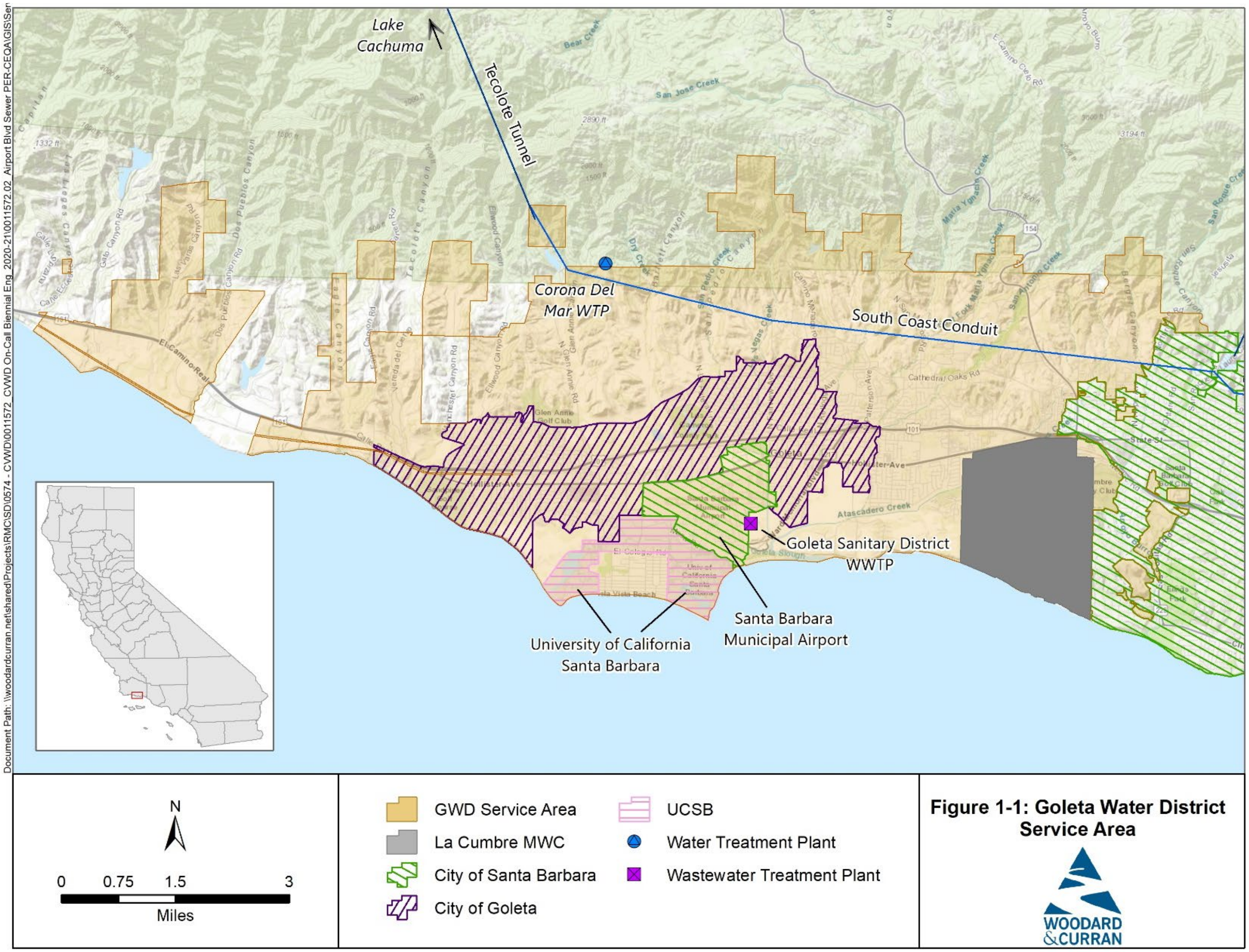


Table 1-4: DWR Table 2-4: Water Supplier Information Exchange

The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC Section 10631.
Wholesale Water Supplier Name
Central Coast Water Authority
Cachuma Operation and Maintenance Board

Table 1-5: DWR Table 10-1: Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
City of Goleta	☒	☒
City of Santa Barbara	☒	☒
County Name	**60 Day Notice**	**Notice of Public Hearing**
Santa Barbara County	☒	☒

Table 1-6: Public Participation Timeline

Date(s)	UWMP Aspect	Action
April-May 2021	Public Draft UWMP	Public Draft available for public review
April 18, 2021	Draft UWMP	Review and input to Draft UWMP by Water Management and Long-Range Planning Committee
May 11, 2021	Public Hearing	Public Hearing, review and input to Draft UWMP by Board of Directors
June 8, 2021	Board Adoption	Board adoption of 2020 UWMP per Resolution
Early July 2021	Final UWMP	Final UWMP released

The components of public participation included:

- Local Media
    - Paid notice in the Santa Barbara News Press
- Agency Outreach
    - City of Goleta
    - County of Santa Barbara
    - UCSB
    - City of Santa Barbara
    - La Cumbre Mutual Water Company

  - Goleta Sanitary District
- Public Availability of Documents
  - GWD website (Document made available online due to COVID-19 pandemic)

Following adoption, the UWMP will be available to the public during normal business hours at GWD administrative headquarters located at 4699 Hollister Avenue, Goleta, CA 93110. This UWMP will be submitted electronically to the Department of Water Resources (DWR) by June 30, 2021.

1.2.2 Resources Maximization

As documented in Chapters 3 through 10 of this UWMP, GWD has demonstrated a long-term commitment to resource maximization and conservation. For many years, GWD has undertaken studies as well as actions to maximize the use of available resources. Studies and documents include the 2010 Water Conservation Plan, 2011 and 2017 Water Supply Management Plans, Sustainability Plan, Infrastructure Improvement Plan 2020-2025, 2016 Groundwater Management Plan, 2017 Potable Reuse Facilities Plan, 2017 Stormwater Resource Plan, and the 2014 Drought Preparedness and Water Shortage Contingency Plan that underwent an update to conform with state requirements concurrent with the development of this UWMP. Further, GWD has been working to maximize the use of available resources while minimizing the use of imported water. In 1994, GWD became a participant in the Memorandum of Understanding Regarding Water Conservation in California (MOU), and a member of the California Urban Water Conservation Council (CUWCC). Signatories pledged to implement all cost-effective Best Management Practices (BMPs) set forth in the MOU. GWD is now a member of the California Water Efficiency Partnership (CalWEP), an organization launched in 2018 to replace the CUWCC to address increasing pressures from a changing climate and new regulations from the State. CalWEP members are committed to providing cutting-edge expertise on critical water issues, challenges, and opportunities within a broad collaborative framework.

This UWMP, along with the above listed planning documents, will be used by GWD staff to guide water use and management efforts through 2040, subject to changing conditions as identified in required five-year updates of the UWMP.

2. DISTRICT SETTING

This chapter provides a brief description of the District's water system and local climate conditions.

2.1 SYSTEM DESCRIPTION

GWD is located in the South Coast portion of Santa Barbara County. The service area encompasses approximately 29,000 acres, and provides water service to approximately 84,500 residents. There are nearly 17,000 active municipal and industrial customer accounts and 165 agricultural accounts within GWD's service area. GWD serves water to the City of Goleta, UCSB, and Santa Barbara Airport; the remainder of GWD is in the unincorporated portion of Santa Barbara County. LCMWC is located within the GWD service area, but manages its own supplies, facilities, and customers, and is not served by GWD.

GWD was formed by a vote of the people within the service area on November 17, 1944. GWD was established as a legal entity to represent the Goleta Valley and to contract with the Santa Barbara County Water Agency and the United States Bureau of Reclamation (USBR) to participate in the Cachuma Project. The Santa Barbara County Water Agency was formed in 1945 and soon thereafter contracted with USBR to develop the Cachuma Project.

GWD has multiple sources of water supply, including the Cachuma Reservoir (which captures Cachuma Project water), groundwater, SWP water, and recycled water. During the 1987 to 1992 drought, it became evident that Lake Cachuma would not be able to supply enough water in the event of a prolonged drought. In 1991, GWD customers voted to import SWP water, and authorized GWD to participate in the SWP through the SAFE Ordinance. Thereafter, the Central Coast Water Authority (CCWA) was formed in 1991 through a Joint Exercise of Powers Agreement among nine public agencies in Santa Barbara County, including GWD. CCWA was specifically formed for the purpose of designing, building and operating the facilities needed to deliver water from the SWP to entities in Santa Barbara County.

GWD's distribution system includes over 270 miles of pipelines ranging in size from two inches to 42 inches in diameter. Water from Cachuma Reservoir and the SWP is treated at the Corona Del Mar Water Treatment Plant (CDM WTP). GWD maintains eight (8) reservoirs ranging in capacity from 0.3 million gallons (MG) to over 6 MG with a total combined capacity of approximately 21 MG.

2.2 CLIMATE

The climate in GWD's service area is generally characterized as Mediterranean coastal: summers are mild and dry, and winters are cool. The average temperature is 59 degrees Fahrenheit. Average rainfall is about 16 inches per year. The average evapotranspiration (ETo) in the region is 43.96 inches per year (Table 2-1). The area is subject to wide variations in annual precipitation. For example, the area received only 5.6 inches of rain in 1990, but received over 45 inches of rain in 1998.

Droughts are a regular feature of California's climate. During California's period of recorded hydrology, the most significant statewide droughts occurred during 1928-34, 1976-77, 1987-92, 2007-09 and 2012-16. In addition, over the past two decades, dry years outnumbered wet years by three to one and temperatures have been the highest on record (Public Policy Institute of California 2020). As a result, GWD received its lowest allocation ever from the SWP (5 percent) in 2014 and received its lowest allocation from the Cachuma Project in 2016 (zero allocation). GWD responded by implementing its Water Shortage Contingency Plan to temporarily reduce demand and access supplemental water supplies, such as stored SWP water, Cachuma Project water, and groundwater. Further discussion of drought response and the District's water supply reliability, including climate change impacts, is included in Chapter 8.

Table 2-1: Climate Data for Goleta Water District

Month	Standard Monthly Average ETo (inches)[1]	Average Rainfall (inches)[2]	Average Temperature (Fahrenheit)[2]
January	1.79	3.46	52
February	2.30	3.33	54
March	3.60	2.96	55
April	4.59	1.17	57
May	5.05	0.29	60
June	4.88	0.07	62
July	5.39	0.03	65
August	5.23	0.05	66
September	4.05	0.23	65
October	3.26	0.55	62
November	2.16	1.67	57
December	1.69	2.52	53
Annual	43.96	16.34	59

Notes:

1. ETo data provided Santa Barbara region, California Irrigation Management Information System (CIMIS) Station #107 for years 1993 to 2020 (DWR 2020).
2. Average for Santa Barbara Airport weather station 047905 for years 1941 to 2016 (Western Regional Climate Center (WRCC) 2016). https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7905

2.3 LAND USE AND SOCIOECONOMIC INFORMATION

Land use in the Goleta Valley is typical for coastal communities in California. In the late 19th century, the Goleta Valley was originally developed as a prominent agricultural region. Over time, however, intensive land uses such as residential and institutional uses developed in the region. This urban expansion resulted in the conversion of some prime agricultural and rural land into diverse urban communities. The land use in the service area is now primarily residential, though it includes a variety of institutional and commercial land uses. Land use in GWD's service area is expected to generally sustain the continued growth of residential, commercial, and institutional developments.

Future development in the service area is guided by the goals set forth in the County of Santa Barbara Comprehensive Plan, first adopted in 1980, and the City of Goleta General Plan, first adopted in 2006. A portion of GWD's service area is also within the County of Santa Barbara Coastal Land Use Plan (CLUP) boundaries which outlines the patterns of development in coastal areas while protecting coastal resources.

A breakdown of the major land use classifications within the service area include:

- **Single Family and Multi-Family Residential:** Single-family land uses are located immediately north of the U.S. Highway 101 and along the coast in Isla Vista. The community of Isla Vista also contains high and medium density residential land uses.

- **Commercial**: Commercial land uses are located within the City of Goleta in the Old Town and Northeast Community Center neighborhoods, as well as in the community of Isla Vista. Future development in the Northeast Community Center neighborhood in Goleta will also support commercial land uses.
- **Institutional**: UCSB is the largest institution within the service area. It is located along the coast, east of Isla Vista and south of the Santa Barbara Municipal Airport.
- **Open Space/Agricultural:** Major open space and passive and active recreational areas are located throughout the coast, both west and east of the community of Isla Vista. Goleta's coastal resource area includes the entire Pacific shoreline and a coastal resort, as well as open lands and resources such as the Sperling Preserve (Ellwood Mesa). Agricultural land uses are primarily located north of Goleta. Within Goleta, lands that are suitable for agriculture are protected and preserved.

Significant development is not expected in the service area as opportunities for new, affordable residential development are limited. According to the Coastal Act policy, new development must be located within or in close proximity to existing developed urban areas such as Goleta before expanding outward. Concentrating new development in Goleta, however, is difficult given its proximity to rural lands. Within Goleta, it is expected that much of the development will occur in the Central Area neighborhood as it includes extensive tracts of vacant land. Future development in this area may include residential housing and recreational areas (County of Santa Barbara 2016; County of Santa Barbara 2019; City of Goleta 2014). While GWD does not approve or deny new development projects, it does issue "can and will serve" letters for new water connections in accordance with the District Code and consistent with requirements contained in the SAFE Water Supplies Ordinance.

Approximately 38 percent of the entire service area population lives in the City of Goleta. An estimated 18 percent of the population lives below the poverty threshold, and the average median annual household income is $76,410. Moreover, 32 percent of the population speaks a language other than English at home, and 27 percent of the population is under 18 years old or 65 years and older (U.S. Census Bureau 2019). GWD does not have any significant demographic factors that would affect water resources management planning.

3. SYSTEM WATER USE

This chapter describes the historical, current and projected water usage within the GWD system. The methodology used to project future water use within GWD's service area is also detailed.

3.1 ESTIMATED POPULATION GROWTH

Population is an important factor utilized by both the District and the state for various purposes, including calculation of gallons per capita per day (GPCD), discussed below. As a component of the 2020 UWMP update, DWR required all water providers to update population calculations based on the calculation methodology provided for the 2015 UWMP update. A detailed description of the methodology used to calculate the GWD population for the 2020 UWMP is provided in Section 4.1.3. Pursuant to the updated population calculation, GWD's 2020 population is estimated to be approximately 84,500 (compared to approximately 82,600 calculated under the 2015 UWMP). Notably, while within the GWD service area, customers served by LCMWC were included in the 2010 UWMP estimate but have been excluded from the population calculation since the 2015 UWMP update.

GWD's population for years 1990, 2000, and 2010 was estimated using Census data. Census tracts within the GWD service area were identified using Geographic Information System (GIS) software. Those census tracts not fully within the GWD service area were mapped and evaluated. In those instances where the urbanized area of the census tract fell within the GWD service area and the rest of the census tract was generally rural, then the population of that census tract was assumed to be in the GWD. In those instances where the urbanized area of the census tract extended outside of the GWD boundary, a percentage of the population was assigned to GWD.

GWD has an estimated current service area population of 84,462, which is based on the population estimation method detailed in Section 4.2.1. Population growth rate estimates are based on projections for 2017 to 2050 made by the Santa Barbara County Association of Governments (SBCAG) (2019). SBCAG determined two different growth rates that apply to GWD's service area, one for the City of Goleta (0.31 percent) and one for the unincorporated area surrounding Goleta and Santa Barbara (0.12 percent). The two growth rates were applied to their respective population and then summed to determine the service area population for the years 2025 to 2040.

Table 3-1: DWR Table 3-1: Population – Current and Projected

Population Served	2020	2025	2030	2035	2040
City of Goleta	32,200	32,500	33,100	33,700	34,300
Unincorporated Santa Barbara	52,262	53,066	53,687	54,491	55,295
Total Population Served	**84,462**	**85,566**	**86,787**	**88,191**	**89,595**

3.2 CURRENT AND HISTORICAL WATER DEMAND

This section presents water use, which includes water "deliveries" and water "demand." "Deliveries" refers to water measured with metered sales to customers, while "demand" includes deliveries plus unaccounted- for water, sales of water to other water purveyors, and water used for groundwater recharge. Unaccounted-for water, which is discussed in detail in Section 3.2.2, is the difference between the amount of water produced and the amount of water sold to customers.

3.2.1 Historical Water Deliveries

Table 3-2 presents information on all historical water deliveries for the years 2015 through 2020. Water usage is characterized by deliveries made to each sector of use including single family residential, multi-family residential, commercial, institutional, landscape and agricultural irrigation. These deliveries are reflective of typical water use decreases during a period of drought (2012 through 2017) as a result of more robust conservation efforts, followed by increases in demand in subsequent average and wet years when conservation efforts are more relaxed.

Table 3-2: Historical Water Deliveries (AF)

Water Use Sector	2015	2016	2017	2018	2019	2020
Single Family	3,251	3,073	3,115	3,254	3,087	3,509
Multi-Family	1,636	1,620	1,724	1,817	1,777	1,814
Commercial	1,790	1,474	1,484	1,521	1,493	1,494
Institutional	543	561	533	558	541	399
Landscape	331	312	375	393	362	433
Agricultural irrigation	3,160	2,297	2,025	2,206	1,965	2,351
Total	**10,711**	**9,337**	**9,256**	**9,749**	**9,225**	**10,000**

Note: Water deliveries shown in this table are based on sales data and do not account for system losses.

3.2.2 Historical Sales

GWD has, on occasion, engaged in the sale of water to other water purveyors when surplus water was available. GWD sold a combined 1,150 AF of water in 2010 to Montecito Water District, Santa Ynez River Water Conservation District-Improvement District No.1, City of Buellton, and La Cumbre Mutual Water Company. GWD also sold 600 AF of water to Montecito Water District in 2013. GWD has not sold water to other water purveyors since 2013.

3.2.3 Historical Groundwater Recharge

GWD has historically participated in the conjunctive use of excess surface water from Lake Cachuma spill events by injecting and storing those wet year seasonal supplies in the Goleta Groundwater Basin for later use. Injection for conjunctive use purposes is documented in the GWD's Groundwater Management Plan, as well as annual reports to the Superior Court pursuant to the Wright Judgment. (Refer to Chapter 5 for an explanation of the Wright Judgement). The excess spill water is not considered a "firm" supply since it is not always available. As an example, the recent multiple dry year drought between 2012 and 2016 resulted in no Cachuma spill water available for injection since 2011.

3.2.4 Distribution System Water Losses

Distribution system water loss (water loss) is the difference between the amount of water produced and the authorized consumption of water. Between 2015 and 2020, water loss was approximately six percent of produced water within GWD's system, which is within the industry standard for system loss. Sources of water loss include:

- Real losses, such as leaks from water lines
- Apparent losses, such as customer meter inaccuracies and unauthorized consumption

Beginning in 2015 with the passage of Senate Bill (SB) 555, agencies are required to calculate losses using the American Water Works Association (AWWA) Method. Table 3-3 provides a water loss summary for the most recent years available. Estimated water losses between 2016 and 2020 were approximately six percent of the total average potable and raw water demand.

Table 3-3: DWR Table 4-4: 12 Month Water Loss Audit Reporting (AFY)

Reporting Period Start Date	Volume of Water Loss
01/2016	483
01/2017	703
01/2018	587
01/2019	564

SB 555 also directed the SWRCB to develop performance standards for volumetric water loss by July 2020. The current proposed standard is to quantify water loss in units of real losses and apparent losses per service connection per day (gallons per connection per day). Although final performance standards have not been released at the time of writing, the draft standards, released in April 2020, have a real water loss standard of 24.3 gallons per connection per day for GWD. The real losses and apparent losses from the most recent water loss audits are shown in **Table 4-3-4**. The 2020 water audit was not available at the time of writing. Based on the State's draft performance standards, GWD is within its long-term targets.

Table 4-3-4: Audited Water Loss Reporting

Sector	2016	2017	2018	2019
Real Losses (gallons/connection/day)	19.27	28.5	24.96	23.52
Apparent (gallons/connection/day)	6.69	7.33	5.62	6.00

3.2.5 2020 Water Demand

State law requires that an UWMP illustrate water deliveries across various customer classes, including: single family residential, multi-family residential, agricultural, commercial, institutional, and landscape customers. GWD's 2020 potable and raw water deliveries were comprised of 53 percent residential, 24 percent agricultural irrigation, 19 percent commercial and institutional, and 4 percent landscape irrigation (comprised of dedicated irrigation meters). Note that untreated (raw) surface water is delivered to 28 agricultural irrigation customers through a separate water system. Actual water deliveries to serve that 2020 demand are provided in Table 3-5. Since all GWD accounts are metered, the deliveries reported in Table 3-5 are from meter readings.

Table 3-5: DWR Table 4-1: Demand for Potable and Raw (Chlorinated) Water – Actual (2020)

Use Type	2020 Actual	
	Level of Treatment When Delivered	Volume (AF)
Single Family	Drinking Water	3,509
Multi-Family	Drinking Water	1,814
Commercial	Drinking Water	1,494
Institutional/Governmental	Drinking Water	399
Landscape	Drinking Water	433
Agricultural Irrigation	Drinking Water	1,310
Agricultural Irrigation	Raw (Chlorinated) Water	1,041
Sales/Transfers/Exchanges to other agencies	Drinking Water	0
Losses		623
Total		**10,623**

Note: Losses are based on an average of system losses from 2017-2019.

3.3 PROJECTED WATER DEMAND

3.3.1 Projected Water Deliveries

Population projections are often the main component used to project future water demand; however, there are other key factors like economic conditions, land use policies, changes in technology, and water costs that may also influence future demand. Agricultural acreage under production also has a substantial impact on projected water demand. **The interplay of these factors can make predicting future water use challenging over a 20-year period.**

The methodology used to project future GWD water demand through 2040 begins with establishing normal baseline use relative to population. Between 2012 and 2016, GWD's system and supplies were subjected to a severe and extensive drought that resulted in significant demand reductions in 2014 through 2016. Water demand in the service area never fully rebounded after the drought to pre-drought levels before demand was affected by the coronavirus pandemic (COVID-19) in 2020. COVID-19 caused GWD's largest customer, UCSB, to temporarily replace in-person classes with virtual instruction through 2021, effectively decreasing the number of students, faculty, and staff on campus and in the surrounding residential communities. This transition to remote instruction resulted in considerable water demand reductions in 2020. The commercial and institutional sectors also experienced similar declines in water demand as businesses closed and citizens were encouraged to work from home to avoid the spread of COVID-19. Since the most recent year cannot, therefore, be considered reflective of normal baseline use, the average of the years 2017 to 2018 was used instead. Notably, these years had close to average local ETo[3] with 2017 having lower and

[3] ETo is a measure of the water needed for outdoor irrigation, and has a direct correlation to the increases and decreases in water consumption exhibited by water users outside of years with strong conservation requirements or incentives. Historically, when the weather is hot and dry, water usage increases. The amount of increase varies according to the number of consecutive

2018 higher levels. Therefore, average water use within each water use sector from 2017 to 2018 was used as the baseline demand for 2020. Then, different projection methods were applied for each water use sector to determine future demand by sector as described here:

1. **Single Family and Multi-Family Residential Sectors:** Residential water demand projections were based on the SBCAG (2019) population growth estimates between 2020 and 2040 for the City of Goleta and unincorporated Santa Barbara County. A proportional annual growth rate of 0.30 percent was calculated based on the ratio of City of Goleta and unincorporated Santa Barbara County within GWD's service area (which had differing individual projected growth rates). This proportional annual growth rate was then applied to the single family and multi-family residential baseline water demand to project water use through 2040.
2. **Commercial Sector:** Commercial water demand projections were based on assumptions for development under the Airport Industrial Specific Plan and the Eastern Goleta Valley Community Plan, as well as recent Water Supply Assessments developed by GWD for the Goleta General Plan and by the County of Santa Barbara for the Isla Vista Master Plan. Buildout of the City of Goleta is still assumed to be completed by 2040.
3. **Institutional Sector:** UCSB is the only customer classified as institutional in GWD's system. Institutional water demand projections for UCSB are based on the UCSB 2010 Long Range Development Plan (LRDP) that was approved by the California Coastal Commission in November 2014. Potable water supplied to UCSB by GWD is constrained by permits and agreements[4] to a total of 1,010[5] acre feet per year (AFY) of potable demand. Accordingly, UCSB water use projections included in this UWMP are capped at that amount. Notably, the majority of UCSB's existing landscape is irrigated with Recycled Water and that practice is expected to continue as planned projects are developed. The estimate of total water use upon full buildout of the 2010 LRDP is 970 AFY.
4. **Landscape Irrigation and Agricultural Sectors:** Since there are no projected increases in either landscape or agricultural irrigation, water demand projections are projected to be equivalent to the average baseline use between 2017 and 2018.

Per capita water use for 2020 was 100 gallons per capita per day (GPCD), which is well below the 2020 GPCD target for GWD (as derived in Chapter 4). Consequently, no additional conservation was assumed for the demand projections. Per capita residential, commercial, and industrial usage decreased significantly during the recent historic drought, which required the implementation of more aggressive water conservation practices. The demand projections are conservative when considering that some District customers will continue some of their recent active conservation measures in response to the recent drought and passive water conservation will continue to occur over the projection period.

3.3.2 Projected Groundwater Recharge

GWD has an active Aquifer Storage and Recovery Program through which water is injected into the basin for recharge and storage during wet years, and extracted to serve customers in dry years. Sources of water for injection may include Cachuma Project spill water and SWP water, depending on availability and circumstances. Since this recharge water

years of hot, dry weather and the conservation activities imposed. During cool and wet years, historical water usage decreases to reflect less water usage for exterior landscaping and agricultural uses. Past studies by GWD have indicated that demand increases by approximately 7 percent above normal during dry years.

[4] Water Reclamation Agreement of 1991 and Devereux Agreement.

[5] UCSB also has an additional entitlement of 200 AFY that it acquired via an agreement with the University Exchange Corporation for use at North Campus.

is not considered a source of supply until it is pumped for direct use, it is not considered an end use or demand. As described previously, GWD has not recharged through injection in recent years due to the prolonged drought period; however, GWD has completed CEQA review and permitting process with the Central Coast Water Board (CCWB) and received a permit to resume aquifer storage and recovery (ASR) within the Goleta Groundwater Basin in December 2020. The District is currently enrolled under SWRCB Water Quality Order No. WQ 2012-0010, Aquifer Storage and Recovery Projects that Inject Drinking Water into Groundwater. The District does not project to have excess surface water available for injection in 2021, and is currently estimating injection of 600 AFY starting in 2022. GWD is also actively studying stormwater capture and recycled water augmentation as potential sources of additional supply to recharge the basin.

3.3.3 Projected Sales

GWD does not anticipate any regular or large sales to other agencies in the foreseeable future. GWD may consider selling water on a short-term basis when projected or actual supplies exceed GWD demand and the ability to inject into the groundwater basin.

3.3.4 Projected Unaccounted-for Water

For projections, unaccounted-for water is assumed to be approximately six percent of total sales, based on historical estimates. In Table 3-6, similar to historical unaccounted-for water reporting, the category is divided between the DWR UWMP categories of “Losses” and “Other,” with “Losses” defined based on the AWWA Method to be “real losses” and “Other” defined as being “apparent losses.”

3.3.5 Projected Water Demand

Table 3-6 provides projected potable water demand, by sector, for years 2025 through 2040.

Table 3-6: DWR Table 4-2: Demand for Potable and Raw Water – Projected (2025 to 2040) (AFY)

Water Use Type	2025	2030	2035	2040
Single Family	3,254	3,300	3,354	3,407
Multi-Family	1,899	1,927	1,957	1,989
Commercial	1,700	1,856	1,986	2,056
Institutional/Governmental	800	1,010	1,010	1,010
Landscape	445	445	445	445
Agricultural Irrigation	2,128	2,129	2,129	2,128
Sales/Transfers/Exchanges to other agencies	0	0	0	0
Losses	640	658	680	702
Total Estimated Demand	**10,866**	**11,325**	**11,561**	**11,737**

Note: GWD is planning to inject 600-1,000 AFY over the next two calendar years, but is not projecting this as a long-term supply. Therefore, Groundwater Recharge is not included as a demand in this table.

3.3.6 Projected Total Water Use

Table 3-7 presents the total projected water use for the years 2025 to 2040, including non-potable recycled water use discussed in Chapter 6.

Table 3-7: DWR Table 4-3: Total Water Demand

Water Use	Current	2025	2030	2035	2040
Potable and Raw Water (1)	10,623	10,866	11,325	11,561	11,737
Recycled Water Demand (2)	729	768	772	772	772
Total	**11,352**	**11,634**	**12,359**	**12,594**	**12,771**

Notes:
1. Raw water is untreated surface water from the Cachuma Project. Includes water losses.
2. Recycled Water Demand is from Chapter 6.

3.3.7 Water Use Projections for Low Income Households

Senate Bill 1087 requires that UWMP water use projections include the projected water use for lower income single-family and multi-family residential housing within the water purveyor's service area. Based on 2010 Census Data, the Santa Barbara County Housing Element estimates that "extremely low," "very low," and "low" income households make up approximately 35.3 percent of all households in the City of Goleta and unincorporated County area (Santa Barbara County 2015). However, to meet regional housing needs goals, the County estimates that 40 percent of new housing units in unincorporated areas would need to be suitable for extremely low, very low, or low income residents (Santa Barbara County 2015). The City of Goleta also updated its General Plan Housing Element in December 2014 and applied the same assumptions that, to meet its regional housing need goals, 40 percent of new housing units in the city would need to be suitable for extremely low, very low, or low income residents (City of Goleta 2014). Table 3-8 verifies inclusion of low-income residential demand in GWD demand projections.

Table 3-8: DWR Table 4-5: Inclusion in Water Use Projections

Are Future Water Savings Included in Projections?	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc… utilized in demand projections are found.	Chapter 9 Demand Management Measures
Is Lower Income Residential Demand Included In Projections?	Yes

Further, GWD treats all customers equitably and will not deny, conditionally approve, or reduce water services applied for by a proposed development that includes housing units affordable to lower income households unless one of the following occurs:

- GWD specifically finds that it does not have sufficient water supply
- GWD is subject to a compliance order issued by the California Department of Public Health that prohibits new water connections
- The applicant has failed to agree to reasonable terms and conditions relating to the provision of services

4. BASELINES AND TARGETS

4.1 WATER CONSERVATION ACT AND UWMP REQUIREMENTS

The Water Conservation Act of 2009 (SBX7-7) is one of four policy bills enacted as part of the November 2009 Comprehensive Water Package (Special Session Policy Bills and Bond Summary). SBX7-7 provides the regulatory framework to support the statewide reduction in urban per capita water use described in the *20x2020 Water Conservation Plan* (DWR 2010). Consistent with SBX7-7, water suppliers must determine and report existing baseline water consumption and establish water use targets in GPCD for the year 2020.

All 2020 UWMPs include:

1. Baseline Daily Per Capita Water Use calculation (average GPCD used in past years)
2. Compliance Water Use Target (target GPCD in 2020)
3. Demonstration of Compliance with the Water Use Target (actual GPCD in 2020)

GPCD is an expression of the average rate of domestic and commercial water demand, and is calculated using the water supplier's total potable water production, excluding agricultural use, and the population within the water supplier's service area. This chapter describes the methods used to develop GWD's baseline water consumption and water use targets, and reports the results.

4.1.1 Baseline Daily Per Capita Water Use Method

The Baseline GPCD calculation is based on gross water use by an agency in each year of the baseline period. CWC stipulates that the baseline period be 10 years in length ending no earlier than 2004 and no later than 2010. Baseline GPCD must account for all water sent to retail customers, excluding:

- Recycled water
- Water sent to another water agency
- Water that went into storage

It is at an agency's discretion whether to exclude agricultural water use from the baseline GPCD calculation. If agricultural water use is excluded from the baseline GPCD calculation, it must also be excluded from the calculation of actual water use in later urban water management plans. GWD has elected to exclude agricultural water use from its calculation of baseline GPCD. Due to the large acreage of agriculture under production under the ownership of only a few customers, excluding agricultural water use from baseline GPCD results in a more representative target for urban water use reduction.

4.1.2 Compliance Water Use Target Methods

An urban retail water supplier must set a 2020 water use target (Compliance Water Use Target) and a 2015 interim target (Interim Water Use Target). There are four methods for calculating the Compliance Water Use Target, as follows.

- Eighty percent of the urban water supplier's Baseline GPCD
- GPCD estimated using the sum of:
    a. For indoor residential water use, 55 GPCD water use as a provisional standard. Upon completion of DWR's 2016 report to the Legislature reviewing progress toward achieving the

statewide 20 percent reduction target, this standard may be adjusted by the Legislature by statute.

b. For landscape irrigated through dedicated or residential meters or connections, water use efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in section 490 et seq. of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992.

c. For commercial, industrial, and institutional (CII) uses, a ten percent reduction in water use from the baseline CII water use by 2020.

- Ninety-five percent of the applicable state hydrologic region target as stated in the *20x2020 Water Conservation Plan* (DWR 2010). GWD falls within the Central Coast Hydrologic Region.
- For this target method, savings are assumed between the baseline period and 2020 due to metering of unmetered water connections and achieving water conservation measures in three water use sectors:

a. Indoor residential

b. CII

c. Landscape water use, water loss, and other unaccounted-for water.

The selected Compliance Water Use Target must be compared against what DWR calls the "Maximum Allowable GPCD". The Maximum Allowable GPCD is based on 95 percent of a 5-year average base gross water use from 2003 to 2010. The Maximum Allowable GPCD is used to determine whether a supplier's 2015 and 2020 per capita water use targets meet the minimum water use reduction of SBX7-7. If a supplier's Compliance Water Use Target is higher than the Maximum Allowable GPCD, the supplier must instead use the Maximum Allowable GPCD as their target. Baseline and Target Development

GWD's 2010 UWMP included calculations to determine the Baseline GPCD, Compliance Water Use Target, and Interim Water Use Target. These 2010 SBX7-7 calculations were re-calibrated for the 2015 UWMP to meet additional requirements stipulated in the 2015 UWMP Guidebook for Urban Water Suppliers. The Baseline GPCD and Water Use Target calculated in the 2015 UWMP has remained the same for the 2020 UWMP. DWR has provided a SBX7-7 Verification Form that details baseline and target GPCD calculation and verifies that the 2020 target has been met (see Appendix C).

To calculate the revised Baseline GPCD, population estimates for 1990 to 2010 were first developed. Then, the population estimates were compared to water production records to estimate the Baseline GPCD, Interim Water Use Target, Compliance Water Use Target, and Maximum Allowable GPCD. Compliance with the Water Use Target is determined using the estimated 2020 population compared to water production records. The following sections describe each step in this methodology in more detail.

4.1.3 Population Projections

Agencies were required to recalculate their Baseline GPCD in the 2015 UWMP with final 2010 U.S. Census data, which was not available until after the 2010 UWMP was completed. DWR developed a population tool that calculates the estimated population served by a water provider whose boundaries do not correspond with a city or Census Designated Place, such as GWD. Preliminary runs of the calculation tool indicated a lower and declining population in the District service area, contrary to District estimates in the 2010 UWMP and observed demographics. It was determined that the tool's method for distributing population across Census blocks was leading to the exclusion of some of GWD's service area population. Accordingly, an alternate population calculation method was utilized to ensure the most accurate estimate for the population served by GWD within its service area. The alternative approach was approved by DWR through conversations with staff during the development of the 2015 UWMP and was re-approved for use in the 2020 UWMP (see Appendix D).

To calculate population in Census years the following steps were taken.

- Census block groups[6] for the years 1990, 2000, and 2010 were compared to GWD's water service area boundaries using GIS to determine which census block groups were served by GWD. GWD is bordered to the north and west by very sparsely populated areas including the Los Padres National Forest and to the East by the City of Santa Barbara water service area. Some individual census block groups include both the GWD service area and either Los Padres National Forest or the City of Santa Barbara.
- For census block groups that were partially within the service area and partially within the Los Padres National Forest or a neighboring rural area, the entire population for the census block group was counted as part of GWD's service area. Areal imagery for these areas was used to confirm that the clear majority of developed (i.e., populated) areas were within GWD's service area to validate the inclusion of the full census block group population in those instances.
- In instances where a portion of the census block group also included the City of Santa Barbara, GIS was used to determine the percentage of the geographic area of the block group within GWD's service area, assuming that the population was evenly distributed throughout the block group. That percentage was then applied to the total population for the block group to determine how much of the population to include as part of the service area population.

Once the population of each block group served by GWD was better defined, the total service area population was summed for 1990, 2000, and 2010.

The population in non-Census years between 1995 and 2010 was determined by first calculating the persons per connection for 1990, 2000, and 2010 using the total number of active GWD connections and population. Then, the rate of change in persons per connection between 1990 and 2000 and between 2000 and 2010 was calculated. The rate was applied to estimate the persons per connection in all non-Census years and combined with the total number of connections in those years to estimate the annual population.

The population for 2020 was estimated by applying the persons per connection rate of change from 2000 to 2010 to 2020 to estimate the 2020 persons per connection. This 2020 persons per connection was then multiplied by the actual number of connections in 2020 to estimate population in that year. As noted in Section 3.1, however, these numbers remain below the previously estimated population of 86,946 contained in the 2010 UWMP and utilized by the District, likely due to the exclusion of LCMWC-served customers that are within the GWD service area, and the revised population calculation method.

[6] DWR requested that the census blocks be used for alternative population calculations. However, block groups, which have larger areas than blocks, were used because block group is the finest level of census data that is readily available for 1990 and using the block group level for all census years allowed for consistency in the analysis.

Figure 4-1: 1995 to 2020 UWMP Population Estimates

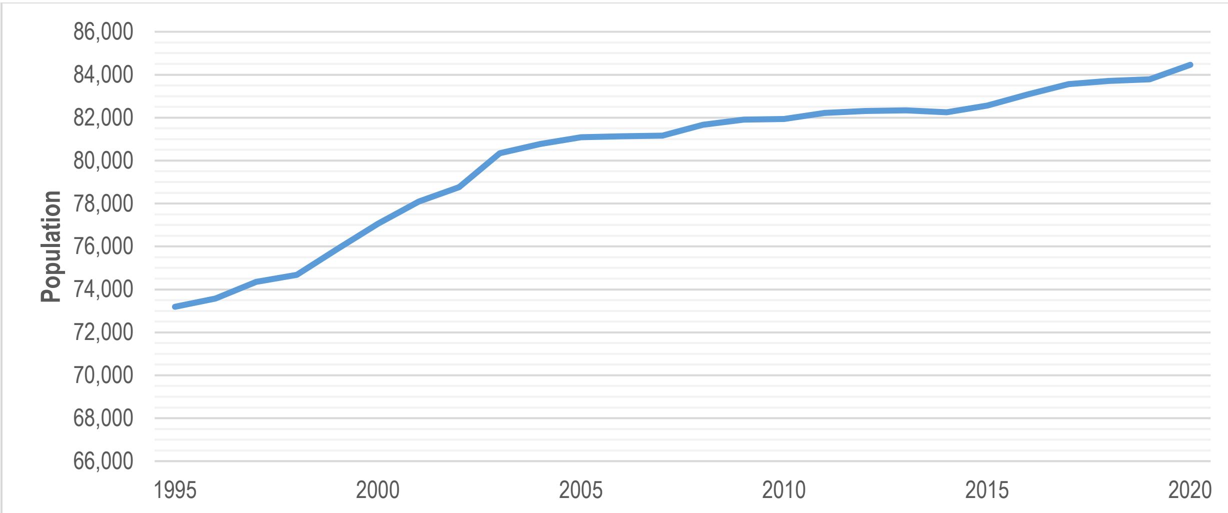


Table 4-1: 1995 to 2020 UWMP Population Estimates

Year	Population	Source
1995	73,190	Interpolation using persons per connection method
1996	73,577	
1997	74,346	
1998	74,684	
1999	75,891	
2000	**77,056**	**2000 U.S. Census**
2001	78,097	Interpolation using persons per connection method
2002	78,760	
2003	80,348	
2004	80,775	
2005	81,088	
2006	81,134	
2007	81,169	
2008	81,673	
2009	81,905	
2010	**81,938**	**2010 U.S. Census**
2011	82,215	Extrapolation using persons per connection method
2012	82,312	
2013	82,338	
2014	82,255	
2015	82,569	
2016	83,086	
2017	83,555	
2018	83,707	
2019	83,789	
2020	84,462	

4.1.4 Baseline Gross Per Capita Demand

The UWMP Act allows urban water retailers to evaluate their Baseline GPCD by using a 10- or 15-year period. The 10-year base period must fall within 1995 to 2010. A 15-year base period is allowed if recycled water made up 10 percent or more of the 2008 retail water delivery. For GWD, recycled water use was less than 10 percent of total 2008 water deliveries, so the 10-year period was used. Table 4-2 presents the Baseline GPCD calculation for GWD of 127 GPCD. The period 1995 to 2004 was selected for calculation of GWD's 10-year base period.

Table 4-2: Computation of Baseline GPCD

Base Period Year		Distribution System Population	Daily System Gross Water Use (GPD)	Annual Daily Per Capita Water Use (GPCD)
Sequence Year	Calendar Year			
Year 1	1995	73,190	9,213,926	126
Year 2	1996	73,577	9,400,384	128
Year 3	1997	74,346	9,556,413	129
Year 4	1998	74,684	11,249,990	151
Year 5	1999	75,891	10,333,172	136
Year 6	2000	77,056	9,451,517	123
Year 7	2001	78,097	9,530,584	122
Year 8	2002	78,760	9,832,105	125
Year 9	2003	80,348	9,252,892	115
Year 10	2004	80,775	9,686,871	120
Baseline GPCD				**127**

In addition, urban retailers must report GPCD for a five-year period within 2003 to 2010 as the basis for the Maximum Allowable GPCD. Tables 4-3 shows the Maximum Allowable GPCD calculations for GWD using the period of 2004 to 2008 as the five-year base period.

Table 4-3: Computation of Maximum Allowable GPCD

Base Period Year		Distribution System Population	Daily System Gross Water Use (GPD)	Annual Daily Per Capita Water Use (GPCD)
Sequence Year	Calendar Year			
Year 1	2004	80,775	9,686,871	120
Year 2	2005	81,088	9,698,689	120
Year 3	2006	81,134	9,048,370	112
Year 4	2007	81,169	9,429,255	116
Year 5	2008	81,673	9,735,490	119
5-Year Base Daily Per Capita Water Use				**117**
Maximum Allowable GPCD (95% of 5-Year Average)				**111**

4.1.5 Compliance Water Use Targets

SBX7-7 requires that water suppliers identify demand reduction targets. GWD has selected Method 3 to calculate the Compliance Water Use Target (for 2020). The Compliance Water Use Target under Method 3 is calculated as 95 percent of the applicable state hydrologic region target. GWD is within the Central Coast Hydrologic Region, which has a GPCD target of 123; therefore, 95 percent of the region target results in a water use target of 117 GPCD. However, since the Maximum Allowable GPCD is 111, which is lower than the calculated Compliance Water Use Target under Method 3 (117 GPCD), the Compliance Water Use Target must be set at the lower value of 111 GPCD. A summary of baselines and resulting targets is presented in Table 4-4.

Table 4-4: DWR Table 5-1: Baseline and Targets Summary

Baseline Period	Start Year	End Year	Average Baseline GPCD	Confirmed 2020 Target
10-15 year	1995	2004	127	111
5 Year	2004	2008	117	

Note: All values in GPCD.

4.2 TARGET COMPLIANCE

As noted above, water suppliers are required to calculate their actual 2020 GPCD to assess and determine whether they have met the 2020 target. Based on 2020 gross water use and estimated population, and as shown in Table 4-2, GWD's 2020 actual water use is 100 GPCD. GWD has therefore met its 2020 water use reduction target and no optional adjustments were made to its 2020 GPCD.

Table 4-2: DWR Table 5-2: 2020 Compliance

Actual 2020 GPCD*	Optional Adjustments to 2020 GPCD					2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?
	Extraordinary Events	Economic Adjustment	Weather Normalization	TOTAL Adjustments	Adjusted 2020 GPCD		
100	0	0	0	0	100	100	yes

5. SYSTEM SUPPLIES

This chapter describes the water supplies and sources that have been and will be used to meet GWD's service area demand described in Chapter 3. The projected reliability of each of the supplies is discussed in Chapter 8.

5.1 CACHUMA PROJECT WATER

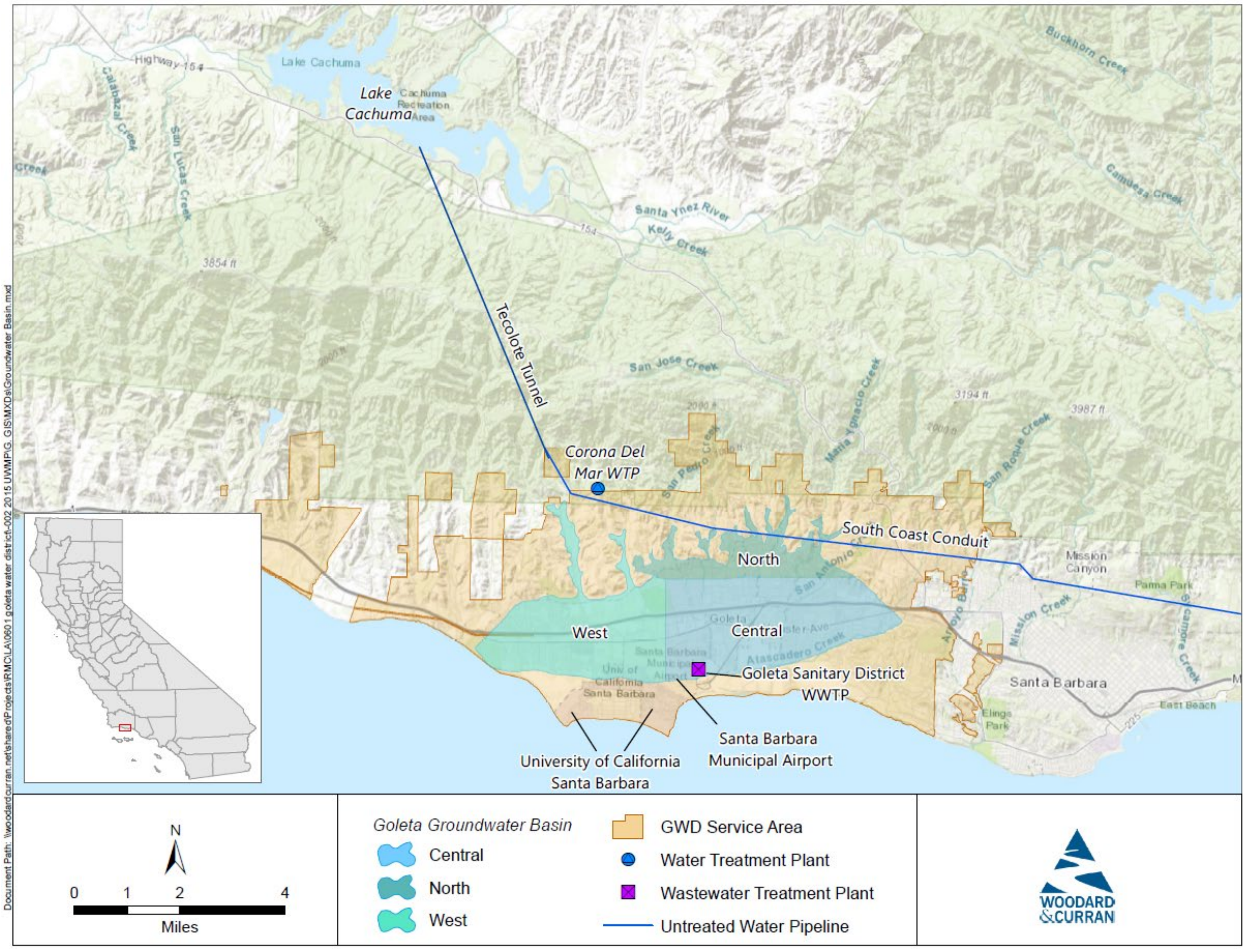
The Cachuma Project captures seasonal flows from the Upper Santa Ynez River system, which originates in the San Rafael Mountains in the Los Padres National Forest and is fed by local precipitation. The watershed is bounded by the San Rafael Mountains to the northeast, the Purisima Hills to the north, and the Santa Ynez Mountains to the south. Under normal conditions, most of GWD's water supply is from the Cachuma Project, which was constructed by the USBR on the Santa Ynez River in the early 1950's. The Cachuma Project consists of Bradbury Dam, Tecolote Tunnel, South Coast Conduit, Lake Cachuma, and various water conveyance facilities. The locations of these facilities are provided in Figure 5-1. Lake Cachuma has an estimated capacity of approximately 190,000 AF and is operated by the Cachuma Operation and Maintenance Board (COMB) under contract with USBR.

Water is provided to Cachuma Project Member Units for irrigation, domestic, and municipal and industrial water uses. Under the Cachuma Master Contract, USBR makes available up to 25,714 AFY of Cachuma Project Water to Cachuma Member Units. The Member Units include GWD, City of Santa Barbara, Montecito Water District, Carpinteria Valley Water District, and Santa Ynez River Water Conservation District Improvement District #1 (ID#1). Each member unit has an entitlement to a specific amount of water, but the amount of Cachuma Project water delivered to member units varies from year to year depending on winter runoff, lake storage, water demand, downstream releases for fish, and other water supply sources.

Water is diverted from Lake Cachuma to the south coast of Santa Barbara County through the Tecolote Tunnel, which extends approximately 6.4 miles through the Santa Ynez Mountains to the headworks of the South Coast Conduit at Glen Annie reservoir. The South Coast Conduit extends for approximately 24 miles from Goleta to Carpinteria, and delivers water to GWD at the CDM WTP for treatment and delivery to potable water customers. A turnout at Glen Annie Reservoir, which is upstream of CDM WTP, supplies raw water that is chlorinated by GWD prior to delivery to 18 agricultural customers.

There are three categories of Cachuma Project water: regular entitlement water, carryover water, and spill water. GWD's regular entitlement water yield is 9,322 AFY. Entitlement that is not used in any year is carried over to the following years. However, when Cachuma spills (on average every three years), all carryover water is considered lost. When Cachuma spills, GWD can take as much water as it can use without debiting its entitlement for that year. The amount of spill water that GWD can use for meeting customer demand and groundwater injection is largely limited by GWD's surface water treatment and groundwater injection capacity.

Figure 5-1: Goleta Water District Groundwater Basin and Surface Water Facilities



5.2 STATE WATER PROJECT WATER

The SWP is the largest state-built, multi-purpose water project in the country. It was authorized by the California State Legislature in 1959 with the construction of most facilities completed by 1973. Today, the SWP includes 34 storage facilities, reservoirs and lakes, 20 pumping plants, four pumping-generating plants, five hydro-electric plants and approximately 700 miles of aqueducts and pipelines. The primary water source for the SWP is the Feather River, a tributary of the Sacramento River. Storage released from Oroville Dam on the Feather River flows down natural river channels to the Sacramento-San Joaquin River Delta (Delta). While some SWP supplies are pumped from the northern Delta into the North Bay Aqueduct, the vast majority of SWP supplies are pumped from the southern Delta into the 444-mile-long California Aqueduct. Near Kettleman City, the Coastal Branch Aqueduct splits from the California Aqueduct for water delivery to agricultural areas to the west and municipal and industrial water users in San Luis Obispo and Santa Barbara counties.

In 1991, customers within the GWD service area voted to purchase an annual water supply capacity of 4,500 AFY from the SWP. The SWP conveyance facilities to Lake Cachuma were completed in 1997 by the CCWA. The CCWA is a California Joint Powers Agency formed by its nine public agency members, including GWD, and serves as the SWP water contractor. CCWA was formed to construct the necessary facilities to deliver SWP to its members, and now operates and maintains those facilities. SWP water deliveries through the CCWA system began in 1997. SWP supplies are commingled with Cachuma Project water in Lake Cachuma, and are also conveyed through the Tecolote Tunnel to the South Coast Conduit where it is delivered to the CDM WTP for treatment and use by GWD.

GWD has an SWP allocation of 7,000 AFY and an additional drought buffer amount of 450 AFY for a total of 7,450 AF of SWP water entitlement available per year. However, GWD only purchased 4,500 AFY of capacity in the Coastal Branch of the California Aqueduct and is limited to this amount in any given year. In addition, GWD currently uses two means of storing SWP water – Cachuma Reservoir and CCWA storage in San Luis Reservoir. For both options, stored water can be lost if the reservoirs spill. GWD can also purchase supplemental SWP water in dry years through CCWA.

The amount of SWP water delivered to SWP contractors in each year depends on several factors, including the demand for the supply, rainfall, snowpack, runoff, water in storage, pumping capacity from the Delta, and legal/regulatory constraints on SWP operation. Water delivery reliability, discussed further in Chapter 8, depends on three general factors: the availability of water, the ability to convey water to the desired point of delivery, and the magnitude of demand for the water. Urban SWP contractors' requests for SWP water, which were low in the early years of the SWP, have been steadily increasing over time.

5.3 GROUNDWATER

The Goleta Groundwater Basin (Basin) underlies the Goleta Coastal Plain (Figure 5-1). The Basin is bounded on the north by bedrock of the Santa Ynez Mountains and to the south by uplifted bedrock along the More Ranch Fault. Tertiary-age bedrock forms the western boundary. The eastern boundary consists of bedrock uplifted along the Modoc Fault. The Basin is approximately eight miles long and three miles wide. Basin groundwater rights were adjudicated in the Wright Judgment (Appendix F). There are three subbasins (shown in Figure 5-1): North, Central, and West; though the North and Central subbasins are often handled as a single subbasin (North-Central). The West subbasin is only partially adjudicated, and is considered separate from the adjudicated Central and North portions of the Goleta Basin in the Wright Judgment. GWD does not pump from the West subbasin.

The Basin is naturally recharged from the Cieneguitas, Atascadero, San Antonio, Maria Ygnacio, San Jose, Las Vegas, San Pedro, Carneros, and Tecolotito creeks, as well as sections of bedrock in the foothills. The lower reaches of these creeks are intermittent where they flow across permeable sediments of the North subbasin, which is an active area of groundwater recharge. Remaining creek flow runs off into the Pacific Ocean with relatively minor recharge of more fine-grained shallow sediments in the Central and West subbasins.

Most usable groundwater in storage in the Basin is present within the Central subbasin. Water-bearing deposits of the subbasin consist of young alluvium of Quaternary and Holocene age, terrace deposits, older alluvium, and the Santa Barbara Formation of Pleistocene age. The Santa Barbara Formation is the primary water-bearing unit and is composed of sand, silt, and clay.

GWD currently has seven fully operational groundwater production wells located in the North and Central subbasins. Total well extraction and treatment capacity is presently about 500 AF per month (GWD 2016). Annual groundwater volume pumped is provided in Table 5-1. The same wells used for extracting groundwater can be used for injection. Until 2012 and the recent drought, GWD had not pumped much of its Basin rights under the Wright Judgement, which has resulted in significant carry over storage within the basin. Since 2012, GWD has increased groundwater production to offset the loss of surface and imported water, as shown in in Table 5-1. This has resulted in groundwater surface elevation declines below the 1972 benchmark, but groundwater modeling and monitoring indicate that the Basin is not approaching historic lows. While some indicator wells demonstrate lower water levels in the Basin, others have not shown substantial drops in water levels.

Table 5-1: DWR Table 6-1: Groundwater Volume Pumped (AF)

Groundwater Type	Location or Basin name	2016	2017	2018	2019	2020
Alluvial Basin	Goleta Groundwater Basin	5,473	2,189	3,066	2,036	822

5.4 GWD SUPPLY MANAGEMENT REQUIREMENTS

GWD manages its supply resources in accordance with the local court judgments, voter-adopted ordinances, agreements and planning recommendations described in this section.

5.4.1 Wright Judgment

GWD has a current adjudicated, appropriative right to extract and use up to 2,350 AFY of groundwater from the Goleta Groundwater Basin under the terms of a court judgment that determined the relative rights to the groundwater in the Basin known as the "Wright Judgment" (*Wright v. Goleta Water District* (1989), Case No. SM57969). The Wright Judgment provides GWD with the right to defer producing its annual groundwater entitlement and considers this water as GWD stored water, which can be used during dry years, droughts, and emergencies. The Wright Judgment also provides the District with the right to inject surface water supplies and claim the recharged water as the District's stored water, in addition to its annual entitlement. When the Cachuma Project spills, the District may receive "spill water" in addition to its annual entitlement without direct cost; whenever Lake Cachuma spills, the District injects the spill water into the groundwater basin. The amount of water stored in the basin is reported annually by GWD. As of 2020, GWD storage in the basin was approximately 44,120 AF (GWD, 2020). As discussed in the previous section, the recoverable amount in any given year is dependent on GWD's well production capacity, which is currently approximately 6,000 AFY. The details of how the Wright Judgment affects GWD's groundwater use are described in GWD's Groundwater Management Plan 2016 Update (Appendix E).

5.4.2 SAFE Ordinance

The SAFE Ordinance, approved by GWD voters in 1991 and amended in 1994, allows GWD to provide new service connections at a rate not to exceed one percent of total potable water supply when certain conditions are met. The SAFE Ordinance directs how GWD manages groundwater and specifies under what conditions groundwater is either pumped or stored. In addition, the SAFE Ordinance establishes an Annual Storage Commitment – a groundwater recharge requirement when the Central subbasin of the Goleta Groundwater Basin drops below 1972 levels. The key determining factors of the Annual Storage Commitment are groundwater elevations in the basin and the availability of Lake Cachuma water in any year. In any year when groundwater levels are below 1972 levels, the "Annual Storage Commitment" is triggered. The Annual Storage Commitment requires that at least 2,477 AF be replenished in the groundwater basin annually after GWD serves existing customers. SAFE requires that the Annual Storage Commitment increase by two thirds of any new potable water allocated in any given year. When groundwater levels are below those of 1972, SAFE requires that any SWP above 3,800 AFY be stored in the Goleta Groundwater Basin after serving existing customers, until the basin is replenished to its 1972 levels. However, even when groundwater elevations are below 1972 levels, SAFE allows groundwater pumping when there are reduced deliveries of Lake Cachuma water. All water below the 1972 levels is considered the "drought buffer" and was intended under the SAFE Ordinance for use during drought in the event that GWD exceeds its appropriative right of 2,350 AFY.

In 2013, the groundwater levels in the Goleta Basin reached record highs due to ample surface water availability and the resulting lack of pumping. During statewide drought and record dry conditions on the Central Coast between 2012 and 2016, groundwater levels in the Goleta Basin have dipped below the 1972 level, the level required to be sustained during non-drought years. As planned, GWD used the stored groundwater for its intended purpose, and will replenish the groundwater basin at a rate dependent upon surface water availability.

Finally, for conservative planning purposes, SAFE requires that SWP supplies be projected as no more than 3,800 AFY. The details of how SAFE affects GWD's groundwater use are described in GWD's Groundwater Management Plan 2016 Update (Appendix E).

5.4.3 Water Supply Management Plan

In 2016-17, GWD updated the 2011 Water Supply Management Plan to update the analysis of the most effective use of GWD's various sources of water supply in terms of reliability and cost, as well as to determine the best use of the water sources to satisfy potential increases in demand in the future and maintain groundwater levels.

The Water Supply Management Plan used the RiverWare model developed for the Santa Ynez River for deliveries from the Cachuma Project, described in Section 5.2, in conjunction with DWR's 2015 SWP Delivery Capability Report and actual deliveries over the past several years as the basis for determining the availability of these water supplies. The 2017 Water Supply Management Plan Update recommends the following management actions:

- Purchase SWP water when available to keep GWD's portion of the CCWA bank in San Luis Reservoir maximized;
- Inject SWP water into the Goleta Groundwater Basin when groundwater levels are below 1972 levels, CCWA pipeline capacity is not exceeded, and demand has been met;
- Optimize use of groundwater and SWP water supplies, particularly during periods when Cachuma Project allocations are reduced;
- Develop 1,500 AFY of future water supply augmentation to compensate for reduced reliability and yield of existing supplies; and
- Develop additional future water supplies if Cachuma Project water contract yield is reduced.

Since the completion of the Water Supply Management Plan, GWD has worked to implement these actions and leverage the use of the groundwater basin, maximize local supplies and reduce reliance on the Delta. For example, GWD successfully leveraged use of groundwater and SWP supplies when Cachuma Project allocations were reduced during the most recent drought period.

GWD also has an active ASR Program through which water is injected into the basin for recharge and storage during wet years, and extracted to serve customers in dry years. As discussed in Section 3.2, GWD has not recharged through injection in recent years due to the prolonged drought period; however, GWD has completed CEQA review and the permitting process with the CCWB and received a permit to resume ASR within the Goleta Groundwater Basin in December 2020.

5.4.4 Sustainable Groundwater Management Act

In 2015, Sustainable Groundwater Management Act (SGMA) 2019 was enacted to provide for the sustainable management of groundwater basins in California. SGMA planning requirements are mandatory for the high- and medium-priority groundwater basins identified by DWR. In these basins, qualifying local agencies are required to create a Groundwater Sustainability Agency (GSA) and adopt a SGMA-compliant Groundwater Sustainability Plan (GSP). Under SGMA, groundwater basin boundaries are as identified in DWR Bulletin 118.

The SGMA 2019 Basin Prioritization process was conducted to reassess the priority of the groundwater basins following the 2016 basin boundary modifications, as required by the Water Code. For the SGMA 2019 Basin Prioritization, DWR followed the process and methodology developed for the CASGEM 2014 Basin Prioritization, adjusted as required by SGMA and related legislation. DWR used the following list of components to re-evaluate prioritization:

1. The population overlying the basin or subbasin.
2. The rate of current and projected growth of the population overlying the basin or subbasin.
3. The number of public supply wells that draw from the basin or subbasin.
4. The total number of wells that draw from the basin or subbasin.
5. The irrigated acreage overlying the basin or subbasin.
6. The degree to which persons overlying the basin or subbasin rely on groundwater as their primary source of water.
7. Any documented impacts on the groundwater within the basin or subbasin, including overdraft, subsidence, saline intrusion, and other water quality degradation.
8. Any other information determined to be relevant by the department, including adverse impacts on local habitat and local streamflows

The Goleta Basin (DWR Basin No. 3-16) has been classified as a very low-priority basin, and is not required to form a groundwater sustainability agency (GSA) and adopt a groundwater sustainability plan (GSP) or submit an alternative to a GSP. DWR determined that as a "Basin with Adjudication & Non-Adjudicated GW Use <9,500 AF," under Component 8C&D of DWR's review, the Basin is a "very low-priority basin." The District, Santa Barbara County, and the City of Goleta all made decisions not to form a GSA for the areas of the Basin not subject to the adjudication, and the District continues to administer its duties under the Wright Judgment adjudication.

5.5 WASTEWATER AND RECYCLED WATER

GWD has been serving recycled water to customers since 1995. In 2020, the Goleta Wastewater Treatment Plant produced 4,930 AF of secondary treated effluent. The recycled water production capacity at the plant operated by Goleta Sanitary District (GSD) is approximately 3,300 AFY based upon the tertiary treatment plant capacity of 3.0 million gallons per day (MGD). The ability to fully utilize recycled water, however, is limited by outdoor irrigation recycled water demand patterns. These demand patterns are typically condensed into a 12-hour period rather than a 24-hour period, and are driven by the irrigation season. While storage is available to address daily needs, storage is not available to address seasonal variability in irrigation demand between the wet winter months and dry summer months. Currently GWD is delivering approximately 729 AFY to customers, and would require additional infrastructure to deliver recycled water more than 1,150 AFY. See Chapter 6 for a more comprehensive description of recycled water infrastructure and supply.

GWD received funding through the Water Recycling Funding Program of the SWRCB for a Goleta Potable Reuse Facilities Plan, which examined the feasibility of expanded use of recycled water within GWD's service area. The plan developed a recommended project and describes the institutional, technical, regulatory, permitting and financing pathways necessary to implement the project in the future. Refer to Section 6.2.2 for further discussion.

5.6 STORMWATER

In recognition of the potential of stormwater to provide new additional water supplies, GWD developed a Stormwater Resources Plan (SRP). The SRP explores how much potential stormwater capture projects could provide, identifies possible types of stormwater capture projects, and analyzes each hydrologic region to determine where the best locations for projects exist. Based on the hydrologic analysis, twelve conceptual projects were identified that could capture approximately 1,700 AF stormwater for either direct use or infiltration to the groundwater basin. In addition, these projects can provide additional benefits such as flood management, water quality, and environmental and community benefits. Because these projects are still in the conceptual stages and are not yet planned for implementation, stormwater has not been included as contributing to supply projections.

5.7 TRANSFERS AND EXCHANGES

GWD has, on occasion, sold water to or purchased water from other water purveyors. In most cases, the transactions were intended to address short-term needs or opportunities. Future short-term water purchases from a willing seller could again be considered in the event of a projected or actual water shortage. Similarly, GWD could consider selling surplus water on a short-term basis when projected or actual supplies are more than GWD demand.

GWD has two categories of potential water exchanges or transfers:

1. **Exchanges or Transfers among Cachuma Project Member Units.** GWD can purchase water from other Cachuma Project Member Units in the event of a need, or to sell unneeded water to other Cachuma Member Units. This type of transaction could occur when there is a willing seller and buyer. Cachuma Member Units can readily transfer water to one another because all the Member Units have water stored in Lake Cachuma; these transactions do not require the approval of USBR.
2. **Exchanges or Transfers among SWP Contractors.** GWD can purchase or sell SWP water from other SWP contractors in the state under the DWR Turnback Pool Program. Under this program, SWP contractors can sell water at any time to other SWP contractors, provided the buyer can convey the water. This type of transaction is coordinated by CCWA on behalf of the local SWP contractors. Each year, DWR notifies CCWA of the anticipated SWP deliveries to its members, including any SWP water for sale by other SWP contractors. GWD can sell up to the amount of SWP water that is available to GWD in that year, and that sale is subject to approval by CCWA. The CCWA contractors can also sell and exchange water among themselves, or among other SWP contractors through the Supplemental Water Purchase Program (SWPP). A member agency wishing to participate in the SWPP indicates the amount of water desired for sale or exchange, and CCWA will attempt to find water to meet those needs. In December 2015, GWD acquired 2,500 AF of supplemental water from another contractor through the CCWA SWPP to augment existing supplies in response to a fourth consecutive year of drought. GWD has also sold water to other CCWA contractors in prior years. Amendment 21 to the State Water Contract would allow for the District to sell and purchase water without exchange obligations. While CCWA approved Amendment 21, as of this writing Santa Barbara County Flood Control & Water Conservation District, who holds the contract for State Water with DWR, has yet to approve Amendment 21.

GWD is also party to an ongoing Exchange Agreement with ID#1 whereby Lake Cachuma water is exchanged for SWP water. This is a “one for one” exchange, and does not result in additional water supply for GWD.

5.8 CURRENT AND PROJECTED WATER SUPPLY

The total water supplies produced or purchased by GWD in 2020 are shown in Table 5-2 and projected water supplies are shown in Table 5-3. As indicated in Table 5-3, supplies available for use by GWD are projected to remain unchanged between now and 2040 except for a small planned increase in recycled water use. The projected reliability of each of the supplies is discussed in Chapter 8.

Table 5-2: DWR Table 6-8: Water Supplies – Actual 2020

Water Supply	Additional Detail on Water Supply	Actual Volume (AFY)	Water Quality	Total Right or Safe Yield (AFY)
Groundwater	Goleta Groundwater Basin	822(1)	Drinking Water	2,350
Recycled Water	Goleta WWTP	729	Recycled Water	4,930(2)
Surface Water	Cachuma Project Water	9,389	Drinking Water	9,322
Purchased or Imported Water	State Water Project	606(3)	Drinking Water	7,450(4)
Total		**11,546**		**24,052**

Notes:

1. The Wright Judgment provides GWD with the right to defer production of its annual groundwater entitlement and considers that water as GWD' stored water for later use during dry years, droughts, and emergencies.
2. This value is the total secondary effluent from the plant in 2020. The current tertiary treatment capacity of 3.0 MGD limits potential recycled water production to approximately 3,300 AFY.
3. Under an Exchange Agreement with Santa Ynez River Water Conservation Improvement District Number 1 (ID#1), GWD State water is delivered directly to ID#1; in exchange, GWD receives an equal amount of ID#1s Lake Cachuma Entitlement water. State water imported in 2020 (606 AF) was "exchanged" with ID#1.
4. The SAFE Ordinance requires that for planning purposes, the District project 3,800 AF of available SWP supplies. The District's maximum Table A entitlement and drought buffer is 7,450 AFY.

Table 5-3: DWR Table 6-9: Water Supplies – Projected (AFY)

Water Supply	Additional Detail on Water Supply	Reasonably Available Volume			
		2025	2030	2035	2040
Groundwater	Goleta Groundwater Basin	2,350	2,350	2,350	2,350
Recycled Water	Goleta WWTP	768	772	772	772
Surface Water	Cachuma Project Water	9,322	9,322	9,322	9,322
Purchased or Imported Water	State Water Project	3,800	3,800	3,800	3,800
Total		**16,240**	**16,244**	**16,244**	**16,244**

5.9 PLANNED WATER SUPPLY PROJECTS AND PROGRAMS

Although current water supply projections as reported in Table 5-3 are consistent through 2040, there are potential planning efforts that could provide options for GWD to further increase the use of local supplies. At the direction of its Board, GWD may investigate and evaluate potentially feasible means of enhancing water supplies for the Goleta Valley. Notably, GWD received funding through the Water Recycling Funding Program of the SWRCB for the development of the Goleta Potable Reuse Facilities Plan (further discussed in Section 6.2.2), which was completed in 2017. As discussed in Section 5.6, GWD also prepared an SRP for the purpose of identifying supply augmentation potential from various stormwater capture projects within GWD. Such additional supplies from potential stormwater projects may further enhance the GWD supply portfolio but are not included as a source of supply for purposes of this UWMP as these projects are still in the conceptual phase.

In addition, GWD will continue to place a strong focus on demand management and achieving permanent conservation to meet future demand. Based on this discussion, GWD does not currently have any planned water supply projects or programs, as indicated in Table 5-4.

Table 5-4: DWR Table 6-7: Expected Future Water Supply Projects or Programs

☒	**No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table.**

5.10 DESALINATED WATER

The California UWMP Act requires a discussion of potential opportunities for use of desalinated water (Water Code Section 10631[i]). GWD participated in the financing of the City of Santa Barbara's seawater desalination plant during the 1987 to 1991 drought, but no longer has any financial or institutional arrangements with the City of Santa Barbara for desalinated water. Past studies by GWD, including an analysis under the 2017 Potable Reuse Facilities Plan, have shown that seawater desalination is currently not financially feasible, particularly when compared with other supply augmentation options.

5.11 ENERGY INTENSITY

Energy intensity reporting offers several benefits to GWD and its customers. Benefits include identifying energy savings opportunities, calculating GHG emission reductions associated with the GWD's water conservation program, and identifying potential opportunities for receiving energy efficiency funding. GWD estimated its water services' operational energy intensity using the best available information. Operational energy intensity is defined as the total amount of energy expended by the District on a per acre-foot basis to take water from where GWD acquires water to its point of delivery to customers.

The energy required for conveyance, extraction, treatment and distribution of water is described below.

Conveyance

Energy associated with moving water from water supplies to water treatment plants or distribution systems is termed "conveyance". For the purposes of this UWMP, GWD considers conveyance to be the movement of imported water and Cachuma Project water to the service area to be "conveyance". The energy used to move water from the Delta to the South Coast via pumping plants is estimated by DWR annually in Bulletin 132, and from the Delta to the Polonio Pass Pumping Plant (the last pumping plant along the Coastal Branch Aqueduct) was 2,826 kilowatt hours (kWh) per acre-foot. Imported water that reaches Lake Cachuma, as well as Cachuma Project water, are conveyed by COMB which estimates that in 2020, conveying water from Lake Cachuma to member agencies required approximately 3.8 kWh per AF.

Treatment

SWP and Cachuma Project water supplies are treated at the CDM WTP. In 2020, the CWD WTP used 711,321 kWh of electricity to treat 9,995 AF of water from the Cachuma Project and the SWP, which is approximately 71 kWh per AF.

Extraction

The energy required to pump water from groundwater basins is termed "extraction". In 2020, the energy used to pump the 822 AF of groundwater from GWD's wells is estimated at 1,905,111 kWh, or approximately 2,318 kWh per AF.

Distribution

Once water is either treated or pumped, it is distributed to customers. In order to distribute to all customers and maintain system pressure, various pumps, reservoirs, and other facilities are necessary. The energy required to distribute water to customers in 2020 totaled 386,349 kWh for the 11,546 AF of potable and recycled water delivered, or approximately 107 kWh per AF.

Table 5-5 provides a summary of the energy intensity of GWDs water management processes and Table 5-6 provides a summary of total energy intensity of water supplies. In total, GWD's water deliveries are estimated to have an energy intensity of 485 kWh per AF.

Table 5-5: DWR Table O-1C: Energy Intensity by Water Management Process

Reporting Period: 1/1/2020 to 12/31/2020	Water Management Process				
	Extract and Divert	Conveyance	Treatment	Distribution	Total Utility
Volume of Water Entering Process (AF)	**822**	**9,995**	**9,995**	**11,546**	
Retail Potable Deliveries (%)	100%	100%	100%	94%	
Retail Non-Potable Deliveries (%)	0%	0%	0%	6%	
Total Percentage	100%	100%	100%	100%	
Energy Consumed (kWh)	**1,905,111**	**1,750,537**	**711,321**	**1,230,623**	**5,597,592**
Energy Intensity (kWh per AF)	**2,318**	**175**	**71**	**107**	**N/A**

Table 5-6: DWR Table O-1C: Total Energy Intensity

Water Delivery Type	Production Volume (AF)	Total Utility (kWh/AF)
Retail Potable Deliveries	10,817	511
Retail Non-Potable Deliveries	729	101
All Water Delivery Types	**11,546**	**484**

6. RECYCLED WATER

This chapter describes GWD's recycled water system and recycled water demand projections.

6.1 RECYCLED WATER SYSTEM DESCRIPTION

Both the Goleta West Sanitary District (GWSD) and the GSD provide wastewater collection to customers within the GWD service area. Wastewater from both the GWSD and the GSD is treated at the GSD Wastewater Treatment Plant (WWTP). Recycled water service in the Goleta Valley began in 1994 in response to drought conditions of the early 1990s, and the Wright Judgement and resulting limitations on GWD groundwater pumping. The GSD WWTP is constructed to handle a peak dry weather flow of 9 MGD and produces secondary effluent, a portion of which is sent to the recycled water system. The recycled water system consists of flash mixing tanks, flocculation tanks, anthracite filters, a chlorine contact tank and storage tanks. The on-site storage tanks allow the GSD WWTP to operate at a steady, efficient rate regardless of daily fluctuations in recycled water demand. The existing recycled water system can produce up to 3 MGD (approximately 3,000 AFY) of tertiary effluent for recycling. However, the ability to fully use recycled water is limited by irrigation demand patterns, which are typically condensed into a 12-hour period rather than a 24-hour period, and is limited by recycled water delivery capacity.

Table 6-1 and Table 6-2 provides information on 2020 wastewater collection, treatment, and disposal.

Table 6-1: DWR Table 6-2: Wastewater Collected Within Service Area in 2020

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area in 2020	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
GSD	Metered	4,930	GSD	GSD WWTP	Yes	No
GWSD	Metered	0	GSD	GSD WWTP	Yes	No
Total Wastewater Collected from Service Area in 2020:		4,930				

Note: All values in AF.

Table 6-2: DWR Table 6-3: Wastewater Treatment and Discharge within Service Area in 2020

Wastewater Treatment Plant Name	GSD WWTP
Discharge Location Name or Identifier	Pacific Ocean
Discharge Location Description	5,800 feet offshore and 92 feet below Mean Lower Low Water level
Method of Disposal	Ocean outfall
Does This Plant Treat Wastewater Generated Outside the Service Area?	No
Treatment Level	Secondary Disinfected - 2.2

2020 volumes	Wastewater Treated	4,930
	Discharged Treated Wastewater	4,054
	Recycled Within Service Area	876
	Recycled Outside of Service Area	0
	Instream Flow Permit Requirement	n/a

6.2 RECYCLED WATER DEMAND

Currently, GWD delivers recycled water for landscape irrigation uses as well as a minor amount for toilet flushing. Over the last 20 years, the amount of recycled water produced and delivered has remained relatively constant, with some variation due to rainfall. In years when the Goleta Valley receives higher than normal rainfall, demand for recycled water is low. Additionally, recycled water used for irrigation tends to decrease during periods of drought, likely due to a combination of improved irrigation efficiency and public perception.

Based on known recycled water projects, demand for recycled water is expected to increase by approximately 43 AFY by 2030. Recycled water service inquiries from potential customers have significantly increased during the recent drought period; however, the viability of serving these customers has not been determined yet. Table 6-3 presents projections of potential recycled water use by sector through 2040. Table 6-4 compares 2020 recycled water use with projections from the 2015 UWMP, and shows that actual recycled water use is lower than initial projections, which reflects a loss of existing and planned recycled water customers as well as reduced use during the recent drought period.

Table 6-3: DWR Table 6-4: Recycled Water Direct Beneficial Uses within Service Area

Name of Agency Producing (Treating) the Recycled Water					Goleta Sanitary District				
Name of Agency Operating the Recycled Water Distribution System					Goleta Water District				
Supplemental Water Added in 2020					None				
Source of 2020 Supplemental Water					N/A				
Beneficial Use Type	**Potential Beneficial Uses of RW**	**Amount of Potential Uses of RW**	**General Description of 2020 Uses**	**Level of Treatment**	**2020**	**2025**	**2030**	**2035**	**2040**
Landscape irrigation (excludes golf courses)	Maintaining landscapes	321	Maintaining landscapes	Tertiary	277	292	293	293	293
Golf course irrigation	Watering greens	437	Watering greens	Tertiary	437	461	463	463	463
Commercial use	Toilet flushing/ Cooling towers	26	Toilet Flushing/ Cooling Towers	Tertiary	15	15	16	16	16
				Total	**729**	**768**	**772**	**772**	**772**
Internal Reuse (not counted towards Statewide Recycled Water volume)					147				

Table 6-4: DWR Table 6-5: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

Use Type	2015 Projection for 2020	2020 Actual Use
Landscape irrigation (excludes golf courses)	540	277
Golf course irrigation	630	437
Commercial use	15	15
Total	**1,185**	**729**

6.2.1 Potential Additional Users

Since recycled water system service began in 1994, GWD has added new customers within proximity to the existing system when service is requested. GWD has completed several recycled water market surveys over the years and, most recently, GWD participated in the 2013 South Coast Recycled Water Development Plan (RMC 2013), which was coordinated by the Santa Barbara County Water Agency and funded through Proposition 84. For the GWD service area, the study identified seven potential recycled water users located near the existing recycled water distribution system, with 27 AFY of potential additional demand. Similar to the previous approach, GWD will continue to work with those property owners to expand recycled water use where feasible.

The Goleta Valley has a large agricultural market, a portion of which could potentially use recycled water. There are obstacles to using recycled water for agricultural irrigation, however. Avocados and citrus are the dominant crops in the Goleta Valley, and these are sensitive to dissolved minerals found in recycled water. Avocados are extremely sensitive to total dissolved solids (TDS), requiring water with TDS of less than 800 mg/L. Currently the recycled water system produces water with TDS of approximately 1,250 mg/L. To use recycled water for agricultural irrigation would require additional and, perhaps, costly enhanced treatment. As a result, GWD does not consider agriculture a near-term recycled water customer.

6.2.2 Potable Reuse Study

To support local supply diversity and reliability, GWD developed a Potable Reuse Facilities Plan in 2017 to identify expanded recycled water opportunities beyond existing non-potable use. The recent extended drought has highlighted the variability of Cachuma Project and SWP surface water supplies. GWD's previous water supply planning efforts positioned the community for successful weathering of the existing drought, but future drought conditions, potential increased environmental releases from Lake Cachuma, and increased water supply variability, have highlighted the need to further enhance local supply reliability and the potential for expanding reuse. As a result, GWD's potable reuse study identifies potential opportunities for maximizing the local water supply benefit of the area's wastewater effluent that is not currently reused, but discharged to the ocean.

The goal of the study was to identify the preferred pathway to maximize reuse of recycled water as a potable water supply supplement.

The study considered near-term and long-term opportunities for potable reuse, and developed a recommended project to recharge the groundwater basin with 1,500 AFY of advanced treated recycled water. An implementation plan could identify steps to successfully implement potable reuse with a focus on potential immediate steps should GWD decide to move forward with a project.

6.2.3 Optimizing Recycled Water Use

There are significant financial benefits for recycled water users within the GWD service area. Currently, recycled water rates are 53 percent lower than the landscape irrigation water rate. Recycled water is also available during times of drought and other water shortages and is, therefore, not subject to the same water use restrictions and conservation requirements as potable water. As discussed earlier, GWD actively explores opportunities and local partnerships to identify projects that fully use and increase the long-term viability of recycled water as a permanent supply source for the Goleta Valley in the most efficient way. However, large increases in non-potable demand beyond those identified above are not anticipated in the near future. There are limits to the existing recycled water market, as well as high costs associated with expanding and upgrading the existing recycled water distribution system and related requirements to comply with State health and safety regulations.

Table 6-5: DWR Table 6-6: Methods to Expand Future Recycled Water Use

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Mandatory Use Ordinance	To require connection and use for certain customers	In place	N/A
Rate Structures	Discounted rates to encourage use	In place	N/A
Customer Conversions	Construct infrastructure to serve customers adjacent to existing system	In place	43[1]
Total			**43 AFY**

Note:

1. Based on projected recycled water projects through 2030.

7. WATER QUALITY

The quality of any natural water is dynamic in nature. This is true for the SWP, local surface water, and local groundwater. For surface waters, quality can be affected during periods of intense rainfall or snowmelt, resulting from changes in the routes of surface water movement. These changes can result in the mobilization of new constituents that then enter the water, and dilution or elimination of other constituents. Water quality at Lake Cachuma is also impacted by seasonal mixing and stratification and by biological activity, especially algae blooms. In the urban environmental, groundwater quality can be influenced by the release of chemicals to the environment, including allowed applications of chemicals (e.g. agricultural fertilizers and pest control) and disallowed releases of other substances, including accidental and legacy pollution. Depending on water depth, groundwater will pass through different layers of rock and sediment and leach different materials from those strata that can change water quality. Water depth is a function of local rainfall, rates of groundwater extraction, and artificial recharge. During periods of low groundwater levels, the mineral concentration of groundwater generally increases. Water quality is not a static feature of water, and these dynamic variables must be recognized.

As required by the Safe Drinking Water Act, GWD provides annual Water Quality Reports to its customers, also known as Consumer Confidence Reports (CCR). This mandate is governed by the U.S. Environmental Protection Agency (EPA) and the SWRCB Division of Drinking Water to inform customers of their drinking water quality. In accordance with the Safe Drinking Water Act, GWD monitors regulated and unregulated compounds in its water supply and the water delivered to GWD potable customers consistently meets the standards required by the state and federal regulatory agencies.

As mentioned previously, GWD's sources of water are from the Cachuma Project, SWP, local groundwater and recycled water. This chapter provides a general description of the quality of these water supplies and a discussion of potential water quality impacts on their reliability.

7.1 CACHUMA PROJECT AND SWP WATER

GWD's CDM WTP treats raw surface water from Lake Cachuma (a blend of Cachuma and SWP water). The raw water contains microbial and particulate matter that does not meet federal and state primary and secondary drinking water regulations. The treatment plant is required by these regulations to remove these substances via coagulation, sedimentation, filtration, and disinfection via chlorination. Chlorination provides a disinfectant residual that is required by federal and state regulations, and helps maintain a safe drinking water supply throughout the potable water distribution system. This multi-barrier treatment process has proven sufficient to meet federal and state primary and secondary drinking water standards. The quality of water from the Cachuma Project and SWP water conveyed through Lake Cachuma is not considered an impediment to water supply reliability.

Increased organic matter in Lake Cachuma water has resulted in higher levels of trihalomethanes (THMs) in treated surface water. GWD has implemented operational and treatment changes and upgrades at the CDM WTP and in the distribution system to reduce THM levels and remain compliant with all standards and regulations.

7.2 GROUNDWATER

GWD pumps groundwater from the Central subbasin of the Goleta Groundwater Basin. Historically, this groundwater has contained iron and manganese that did not meet federal and state secondary drinking water regulations (GWD 2016). An evaluation of water quality trends indicates that iron and manganese continues to require additional drinking water treatment prior to delivery to customers. Chloride concentrations in the Central subbasin generally reached a maximum in the late 1980s and early 1990s, coinciding with a period of heavy groundwater pumping. Reduced pumping and injection of lower-chloride Cachuma spill water have reduced chloride levels in groundwater.

GWD treats groundwater for iron and manganese with oxidation via chlorination filtration. Chlorination also provides a disinfectant residual that is required by federal and state regulations and helps maintain a safe drinking water supply throughout the distribution system. Treatment has proven sufficient to meet federal and state primary drinking water regulations.

There are several spills and leaks of contaminants at the ground surface overlying the Goleta Groundwater Basin. The spilled or leaked contaminants range from gasoline (most common) to dry cleaning fluid. The agency responsible for enforcing the cleanup of most of these sites is the CCWB. The CCWB tracks each of these sites, approves remediation plans, and eventually determines when the site is remediated and the case is closed. For the roughly 146 sites in that overlie the Goleta Groundwater Basin (SWRCB, 2021):

- 85 percent have been remediated and the case is closed or is eligible for closure
- 4 percent are currently being remediated
- 8 percent are being assessed for remediation
- 3 percent are currently being monitored

These spills and leaks are only a potential problem to the aquifers in areas of the basin where there are no confining layers that separate the aquifers from the surface soils – the danger is in the recharge areas of the basin where contaminants may move freely from ground surface to aquifer. These recharge areas are generally in the foothills to the north of most spills (GWD 2016).

7.3 WATER QUALITY IMPACTS ON RELIABILITY

Based on current conditions, GWD does not anticipate any significant or immediate changes in its available water supplies due to water quality. However, water quality issues are constantly evolving. GWD will act to protect and treat supplies when needed, but it is well recognized that water quality treatment can have significant costs.

8. WATER SUPPLY RELIABILITY

The UWMP Act requires urban water suppliers to assess water supply reliability by comparing total projected water used with the expected water supply over the next twenty years in five-year increments. The UWMP Act also requires an assessment of water supplies for a single dry year and multiple dry years. The single dry year represents the lowest water supply available to GWD and the multiple dry year period represents the lowest water supply available to GWD for three consecutive years or more. This chapter presents the reliability assessment for GWD's service area.

Reliability is a measure of a water supplier's expected success in managing water shortages. The combination of demand management and supply augmentation options helps to reduce the frequency and severity of shortages. The reliability of GWD's water supply is dependent on the reliability of Cachuma Project, SWP, and local groundwater supplies. Recycled water provides a small supplement to GWD's existing supplies. Table 8-1 shows the factors resulting in inconsistency of supply for GWD's water supply sources.

Legal factors that affect water supply include regulations, judgments and policies that restrict the timing, amount, or way water can be diverted. One example of a legal factor includes groundwater adjudication which prescribes the amount and way groundwater can be extracted. Environmental factors that can affect water supply include requirements to maintain minimum instream flow for fish or habitat, which limit the amount of water that can be diverted for human use. Changes in water quality and water quality regulations can limit the amount of water considered suitable for a particular use. Climatic conditions, particularly long-term drought, may reduce surface water flow and groundwater recharge.

Table 8-1: Factors Resulting in Inconsistency of GWD Supplies

Water Supply Sources	Legal	Environmental	Water Quality	Climatic
Cachuma Project	X	X		X
State Water Project	X	X		X
Groundwater	X	X		X
Recycled Water	X			

8.1 RELIABILITY OF SUPPLIES

8.1.1 Cachuma Project

Normal Cachuma Project deliveries to GWD are 9,322 AFY; however, the amount of Cachuma Project water delivered to member units varies from year to year depending on several factors, including winter runoff, stored lake supplies, water demand, downstream releases for fish and other water supply sources. For the first time in history, GWD received a zero percent (0%) allocation of Cachuma water for the 2015-16 water year due to prolonged drought. GWD's annual average of Cachuma deliveries in the last ten years has been 6,488 AFY, or 70% of annual entitlement.

The Cachuma Master Contract allows GWD to carryover unused water from any given year into the next provided there is storage available. This carryover water bolsters the GWD's supply reliability, particularly during dry or drought years when other sources of supply may be constrained.

Over the past 20 years, however, circumstances surrounding the Cachuma Project have changed, including reduced reservoir capacity due to sedimentation, increased downstream releases required by the National Marine Fisheries Service (NMFS) under the 2000 Biological Opinion, and implementation of the Settlement Agreement with downstream water rights interests. In 2014, the NMFS and USBR formally initiated re-consultation of the 2000 Biological Opinion for steelhead trout and the operation of the Cachuma Project.

In addition, on September 17, 2019, the SWRCB adopted Water Rights Order 2019-0148, modifying U.S. Bureau of Reclamation water rights permits 11308 and 11310 for the purpose of protecting public trust (fishery flows) and water right holders below Bradbury Dam. The State Water Board action follows nearly 20 years of legal efforts to protect water right holders and address long-term declines in native fish populations in the Santa Ynez River. The Order requires the U.S. Bureau of Reclamation to increase flows on the Santa Ynez River below Bradbury Dam to provide additional habitat for steelhead and prevent its extinction. To minimize impacts on local water users, higher flows are required only during wetter years.

Another element of uncertainty is the available storage in Lake Cachuma. Lake Cachuma had an initial storage capacity of 205,000 AF with a surface area of 3,090 acres upon its first filling in 1956. In 2009, the storage capacity of the lake was estimated during a bathymetric survey to be 186,636 AF at 750 feet mean sea level (MSL), indicating approximately 18,238 AF loss since completion of the dam in 1953. In 2013, the normal full operating level was officially changed to 753 MSL, increasing the hydraulic height to 201 feet. That same year, an updated bathymetric survey was conducted that estimated a storage capacity of 184,121 AF at 750 MSL, indicating the loss of another 2,515 AF since 2008. However, this survey also estimated a storage capacity of 193,305 AF at the new full operating level of 753 MSL.

Due to the uncertainty surrounding Cachuma Project availability, the reliability analysis of Cachuma Project water is based on the most recent period of local drought that occurred between 2012 and 2016 when Cachuma entitlements were consistently low.

8.1.2 State Water Project

DWR prepares a biennial report, the SWP Delivery Capability Report (DCR) to assist SWP Contractors and local planners in assessing the near and long-term availability of supplies from the SWP. DWR issued its most recent update of the DCR in 2019. In the 2019 update, DWR provides SWP supply estimates for SWP contractors to use in their planning efforts, including for use in their 2020 UWMPs. The 2019 DCR also includes DWR's estimates of SWP water supply availability under both current and future conditions.

DWR's estimates of SWP deliveries are based on a computer model that simulates monthly operations of the SWP and Central Valley Project systems. Key assumptions and inputs to the model include the system facilities, hydrologic inflows to the system, regulatory and operational constraints on system operations, and projected contractor demand for SWP water. For example, the 2019 DCR uses the following assumptions to model current conditions: existing facilities, hydrologic inflows to the model based on 82 years of historical inflows (1922 through 2003) adjusted to reflect land-use changes, current seal levels reflecting sea level rise, current regulatory and operational constraints, and contractor demand at maximum Table A Amounts. Overall, the current average reliability of SWP water is 58% of Table A allocation, with a low of 7% during the driest year to a high of 99% during the wettest year.

Based on the 2017 Water Supply Management Plan Update, which incorporates the 2015 DCR SWP projections, GWD projects average SWP water use increasing from approximately 1,940 AF in 2015 to approximately 2,450 AF in 2035. The projections consider annual use of SWP annual allocations, storage, contractual capacity in the Coastal Branch of the California Aqueduct, and the SAFE Ordinance (which limits SWP supplies expected in a normal year to 3,800 AF).

The reliability analysis included in this chapter is based on the most recent period of drought from 2012 to 2016, which was a period of both Statewide and local drought. This period aligns with the drought period used to estimate Cachuma Project water and therefore provides an accurate depiction.

8.1.3 Groundwater

Based on the 2017 Water Supply Management Plan Update, GWD anticipates an average year groundwater yield of 2,350 AFY (the GWD allowed base extraction under the Wright Judgment). Under drought conditions, GWD anticipates increasing groundwater production to offset reduced surface water availability. When surface water is available, GWD intends to reduce groundwater production. By not taking all of its groundwater entitlement in an average year and injecting excess surface water in wet years, GWD anticipates maintaining a healthy drought buffer in the Goleta Groundwater Basin for future years. Given potential variations in demand and availability of other supply sources, additional amounts could be pumped from the basin to serve customers, subject to SAFE limitations and pumping capacity constraints; however, GWD does not currently anticipate the need to do so beyond the near-term.

8.1.4 Recycled Water

Recycled water supplies are considered an extremely reliable source of supply. GWD recycled water demand is currently lower than the amount of recycled water generated in its service area. Projected recycled water use is expected to increase approximately 5% above current deliveries to approximately 768 AFY by 2025, and approximately 6% by 2030. GWD does not anticipate any issues with the reliability of recycled water to its customers.

8.2 SUPPLY AND DEMAND COMPARISONS

The 2017 Water Supply Management Plan Update analyzed available supplies and water demand for GWD's service area to assess the region's ability to satisfy demand under three scenarios: a normal water year, single-dry year, and multiple-dry years. The tables in this section present supply and demand for the various drought scenarios for the projected planning period of 2020 to 2040 in five-year increments.

Table 8-2 lists the years that GWD identifies as its historical average, single driest year, and driest multi-year period. These years are known as the "Base Years." The historic hydrologic years that represent each year type are reflected in the "Base Year" column of the table. The normal year supply projections are based on annually available supplies while the single-dry year and multiple dry year supply values are based on actual supplies available in representative single- and multiple-dry year periods, and therefore include carryover supplies from the Cachuma Project and the State Water Project as carryover was available in those dry year periods.

Table 8-2: DWR Table 7-1: Basis of Water Year Data

Year Type	Base Year	Available Supplies if Year Type Repeats[1]	
		Volume Available	% of Average Supply
Average Year	N/A	16,244	100%
Single-Dry Year	2012	15,468	95%
Multiple Dry Years 1st Year	2012	15,468	95%
Multiple Dry Years 2nd Year	2013	14,968	92%
Multiple Dry Years 3rd Year	2014	12,559	77%
Multiple Dry Years 4th Year	2015	12,559	77%
Multiple Dry Years 5th Year[2]	2016	12,559	77%

Notes:

1. The Average Year value is the reasonable available volume of supply available in average years (per Table 5-3: DWR Table 6-9) while the actual use of the available supplies in an average year is expected to be lower than this value.
2. Supplemental imported water purchased during the driest multi-year period is included in the 2016 supply total.
3. While GWD's annual entitlement to Cachuma Project Water is 9,322 AFY, increased amount reflected above for a single dry year includes unused carryover supplies from previous years and is therefore higher than the entitlement amount.

A summary of the different supplies that GWD will use to meet demands under average, single dry year and multiple dry years through 2040 are shown in Table 8-3, Table 8-4, and Table 8-5, respectively. As shown in the tables, use of groundwater and SWP water is lower in average years and increases in dry years to make up for reductions in Cachuma Project water. SWP water supplies in dry years consist of SWP allocation, CCWA Bank water, and supplemental SWP purchases.

The 2017 Water Supply Management Plan Update evaluated ways to optimize supplies to reliably meet demand in drought years. In addition, the plan recommends:

- Injection of SWP into the Goleta Groundwater Basin when possible
- Banking SWP water in San Luis Reservoir as part of the CCWA Bank
- Using Cachuma Project water first to meet water demand except during droughts
- Increasing groundwater pumping/treatment capacity to ensure supply reliability at higher levels of demand in the future
- Developing approximately 1,500 AFY of local supplies to reduce both the frequency and magnitude of future supply shortfalls. The supplies could potentially include injection of advanced treated recycled water into the Goleta Groundwater Basin, stormwater capture, and/or the purchase of local supplies from other water purveyors in the region.
- Developing additional supplemental supplies if the Cachuma Project yield is reduced in the future.

Table 8-3: DWR Table 7-2: Normal Year Supply and Demand Comparison (AFY)

	2025	2030	2035	2040
Supply Totals	16,240	16,244	16,244	16,244
Demand Totals	10,866	11,325	11,561	11,737
Difference in Normal Year	**5,374**	**4,919**	**4,683**	**4,507**

Notes: Supplies available for use by GWD are projected to remain unchanged between now and 2040 except for a small planned increase in recycled water use after 2025.

Table 8-4: DWR Table 7-3: Single Dry Year Supply and Demand Comparison (AFY)

	2025	2030	2035	2040
Supply Totals[1,2]	15,464	15,468	15,468	15,468
Demand Totals	11,627	12,118	12,370	12,559
Difference in Single Dry Year	**3,837**	**3,350**	**3,098**	**2,909**

Notes:
1. Supplies available for use by GWD are projected to remain unchanged between now and 2040 except for a small planned increase in recycled water use after 2025.
2. Supplies reflect actual water available in 2012. While the GWD's annual entitlement to Cachuma Project Water is 9,322 AFY, increased amount reflected above for a single dry year includes unused carryover supplies from previous years and is therefore higher than the entitlement amount.

Table 8-5: DWR Table 7-4: Multiple Dry Years Supply and Demand Comparison (AFY)

		2025	2030	2035	2040
First year	Supply totals	15,464	15,468	15,468	15,468
	Demand totals	11,627	12,118	12,370	12,559
	Difference	**3,837**	**3,350**	**3,098**	**2,909**
Second year	Supply totals	14,964	14,968	14,968	14,968
	Demand totals	11,627	12,118	12,370	12,559
	Difference	**3,338**	**2,850**	**2,598**	**2,409**
Third year	Supply totals	11,627	12,118	12,370	12,559
	Demand totals	11,627	12,118	12,370	12,559
	Difference	**0**	**0**	**0**	**0**
Fourth year	Supply totals	11,627	12,118	12,370	12,559
	Demand totals	11,627	12,118	12,370	12,559
	Difference	**0**	**0**	**0**	**0**
Fifth year	Supply totals	11,627	12,118	12,370	12,559
	Demand totals	11,627	12,118	12,370	12,559
	Difference	**0**	**0**	**0**	**0**

8.3 DROUGHT RISK ASSESSMENT

A Drought Risk Assessment (DRA) was performed in the preparation of this 2020 Plan to evaluate the reliability of each supply source under a long-term drought. The results of the DRA are considered in the development of demand management measures and water supply projects. The DRA provides an opportunity to evaluate the functionality of the GWD's Water Shortage Contingency Plan (WSCP). This evaluation can help identify undesired risks and allow for proactive steps to be taken prior to the next actual long-term drought. The DRA can be modified or updated on an interim cycle, as needed, to allow for the incorporation of new information as it becomes available or in the event of unforeseen circumstances.

Per UWMP requirements, the DRA is based on the five driest consecutive years on record, which are 2012 to 2016 for the purposes of this UWMP. This represents the five-year period with the lowest local water supply production, the most susceptible to variation due to weather. Data used to calculate the GWD's supply capabilities under the scenario of five consecutive dry years is provided in Table 8-6.

Projected SWP and Cachuma Project supplies reflect actual production from 2012-2016. All other local supplies assume no reduction in availability over the five-year period due to the drought resilience of these supplies. Because GWD's recycled water and groundwater supplies are considered to be resilient to drought, GWD's recycled water is held constant at current 2020 production volumes and groundwater pumping is increased to use stored water to help meet demands. Projected demands were calculated by escalating 2020 demands annually for five years.

The below analysis assumes that WSCP actions would be triggered starting with Stage I and increasing to Stage II, resulting in the ability to meet demands during the five year drought.

Table 8-6: DWR Table 7-5: Five-Year Drought Risk Assessment

	2021	2022	2023	2024	2025
Gross Water Use	12,104	12,106	12,115	12,131	12,133
Total Supplies	16,329	15,200	11,465	11,644	11,564
Surplus/Shortfall w/o WSCP Action	4,225	3,094	(650)	(487)	(569)
Planned WSCP Actions (use reduction and supply augmentation)					
WSCP - supply augmentation benefit	0	0	0	0	0
WSCP - use reduction savings benefit	0	1,816	3,029	3,033	3,033
Revised Surplus/(shortfall)	4,225	4,910	2,379	2,546	2,464
Resulting % Use Reduction from WSCP action	0%	15%	25%	25%	25%

8.4 CLIMATE CHANGE

8.4.1 State and Regional Climate Change Analyses

A topic of growing concern for water planners and managers is climate change and the potential impacts it could have on California's future water supplies. Climate change models have predicted that potential effects of climatic changes could include: increased temperature, reduction in Sierra Nevada snowpack depth, early snow melt and a rise in sea level.

In June 2005, Governor Arnold Schwarzenegger issued Executive Order S-3-05, which requires biennial reports on climate change impacts in several areas, including water resources. The State's Climate Action Team was formed in response to Executive Order S-3-05. To help unify analysis across topic areas, the Climate Action Team worked with scientists from the California Applications Program's California Climate Change Center to select a set of future climate projections to be used for analysis. In the assessment *"Using Future Climate Projections to Support Water Resources Decision Making in California,"* the Climate Action Team selected six different global climate change models to evaluate climate change impacts, assuming two different greenhouse gas emission levels (a high end and a low end), for a total of 12 scenarios. The results of the study indicated climate change has already been observed, in that the last 100 years have seen air temperatures rise about one degree Fahrenheit as well a greater documented variance in precipitation with greater extremes in both heavy flooding and severe droughts.

In July 2006, DWR issued "*Progress on Incorporating Climate Change into Management of California's Water Resources*," as required by Executive Order S-3-05. That report demonstrated how various analytical tools could be used to address issues related to climate change. The report presents analytical results showing potential impacts on SWP operations, including reservoir inflows, delivery reliability, average annual carryover storage, as well as many other operational parameters. Some of the main impacts include changes to south-of-Delta SWP deliveries (from an increase of about one percent in a wetter climate change scenario to about a ten percent reduction for a drier scenario), increased winter runoff and lower SWP allocations in the three driest scenarios, lower carryover storage in drier scenarios and higher carryover storage in the wetter scenario.

In 2013, the Santa Barbara Integrated Regional Water Management (IRWM) Plan (RMC 2013) was updated to include an analysis of climate change vulnerabilities, regional climate change adaptation and mitigation goals and strategies that should be implemented throughout the County of Santa Barbara to meet those goals. GWD participated in this analysis, which is included in the resulting climate change-related vulnerabilities, goals and strategies identified in the

Santa Barbara IRWM Plan. The 2019 IRWM Plan presents the most recent and refined analysis to best characterize climate change for GWD and is paraphrased in this section.

8.4.2 Potential Climate Change Impacts

The IRWM Plan identified the potential effects of climate change on the Region. These potential effects are shown in Table 8-7.

Table 8-7: Impacts of Climate Change on the Santa Barbara Region

Impact	Ranges[1]
Temperature change	Winter: Projected increases of 4 to 5°F Summer: Projected increases of 5 to 6°F
Precipitation	5 to 7 inch decrease in average annual rainfall
Sea Level Rise	4 - 30 cm by 2030 12 - 61 cm by 2050 42 - 167 cm by 2100
Supply	SWP delivery decrease of 7%-10% by 2050, and 21%-25% by 2100 Changes to local supply not quantified
Wildfire Risk	Low to moderate increase in projected fire risk
Flood	Greater flood magnitudes[2]

Note:

1. Changes to occur by 2100 unless otherwise noted
2. Greater flood magnitudes are anticipated to result from more frequent atmospheric river-storm events (Fourth California Climate Change Assessment and the corresponding Regional Reports)

8.4.3 Regional Climate Change Vulnerabilities

The Santa Barbara IRWM also conducted a collective exercise to identify and prioritize the resulting vulnerabilities from the climate change impacts to the South Coast Region of Santa Barbara. These prioritized vulnerabilities are provided in Table 8-8.

Table 8-8: Climate Change Vulnerability Issues for the South Coast Region

Prioritization	Vulnerability Issue	
Very High	Water Supply:	Decreases in groundwater and surface water supply Sensitivity due to higher drought potential
	Water Demand:	Lack of groundwater storage to buffer drought
	Water Quality:	Poor water quality in surface waters Increased constituents of concern Increase in treatment needs and costs Increased erosion and sedimentation Increase in saltwater intrusion into coastal basins as a result of sea level rise

Prioritization	Vulnerability Issue	
High	Water Supply:	Decrease in imported supply
	Water Demand:	Habitat demand would be impacted Limited ability to conserve Meeting demand in peak seasons would be difficult
	Water Quality:	Inundation and sea level rise to septic systems and leech fields will cause contamination
	Sea-Level Rise:	Decrease in land Damage to coastal infrastructure, recreation, and tourism Damage to ecosystems and habitat
	Ecosystem & Habitat:	Increased impacts to coastal species
Medium	Water Supply:	Decrease in seasonal reliability
	Water Demand:	Increase in crop demand

8.4.4 GWD Supply Vulnerability to Climate Change

GWD also examined specific vulnerabilities to each of GWD's water supplies as part of the 2017 Water Supply Management Plan:

- **State Water Project:** A portion of GWD's supply includes SWP water. With climate change, it is anticipated that more winter precipitation in the Sierra Nevada will fall as rain instead of snow. Because Sierra Nevada dams are partially operated as flood control facilities, some of the winter rain runoff must be released from the dams to preserve storage space for later storm events, effectively reducing winter storm capture and water available for the SWP. Higher sea levels could threaten the existing levee system in the Delta. Salinity intrusion into the Delta could also require increased releases of freshwater from upstream reservoirs to maintain compliance with water quality standards. (GWD 2017)

- **Cachuma Reservoir:** Ongoing studies by DWR (DWR 2006) indicate that rainfall in southern California will not change significantly, with climate modeling indicating that precipitation will increase in wet years in the Sierra, but decrease in dry years. This modeling suggests that these effects will likely result in less than a 10 percent swing in precipitation in either direction. However, periodic drought periods may be longer in duration affecting runoff into Cachuma Reservoir. (GWD 2017)

- **Groundwater:** Drought periods may be longer in duration, affecting recharge to the groundwater basin. The projected sea level rise discussed above could also potentially allow the sea to encroach farther up the Goleta Slough and extend the estuary over portions of the West and Central subbasins. This encroachment would likely occur over the portions of the basin that are under confined conditions – that is, there are low-permeability sediments that separate the estuary at the surface from the drinking water aquifers at depth. Thus, it is unlikely that this encroachment would allow saline water into the aquifers. (GWD 2017)

- **Infrastructure:** If seawater were to encroach on the Goleta Slough, distribution pipes such as the recycled water line at the slough would potentially have to be relocated. (GWD 2017)

- **Demand.** Higher temperatures could increase evapotranspiration causing an increase in outdoor water use and crop irrigation (GWD 2017). Increased wildfire frequency and severity may increase water demand for firefighting.

8.4.5 Climate Change Adaptation Strategies

Responses to these changing conditions over the coming decades could include infrastructure changes to improve water supply reliability and storage capability, as well as increased conservation efforts and use of recycled water. Notably, GWD's Water Supply Management Plan, Infrastructure Improvement Plan, and Sustainability Plan provide established mechanisms through which GWD responds to observed changes in climate patterns that could be implemented within the context of Board established priorities on an annual and ongoing basis. Specific response actions could address:

- **Groundwater Pumping Capacity**. GWD implemented infrastructure improvement projects that have increased the groundwater pumping capacity from 300 AF per month in 2010, to approximately 500 AF per month. These improvements will help maximize the GWD's ability to meet customer demand during drought or other water shortage emergencies that limit the availability of surface water supplies.

- **Groundwater Supply Availability**: GWD has obtained a permit to re-initiate its ASR program that will inject treated SWP or Cachuma water into the groundwater basin during wet years. This program will help GWD to increase storage in the basin and respond to water shortages during drought years.

- **Treatment Capacity**. The capacity of GWD's treatment facility can be a limiting factor in how much Cachuma Project Water can be injected during a spill event (high turbidity in the storm water can reduce treatment capacity). Raw Cachuma water must be treated prior to injection to meet health requirements and to ensure that the wells used for injection do not get plugged with sediment and organic material. This additional treatment capacity could be relatively expensive because it is anticipated that it will be needed during less than 9 percent of the months that Cachuma spills in the Santa Ynez River (GWD 2017).

Non-infrastructure responses that could increase water supply reliability considering climate change include increasing water use efficiency, increasing use of recycled water, and implementing policies to exert extreme caution in making future water allocations.

9. WATER DEMAND MANAGEMENT MEASURES

9.1 WATER WASTE PREVENTION ORDINANCE

A water waste ordinance explicitly states that the waste of water is prohibited. The ordinance may prohibit specific actions that waste water, such as excessive runoff from landscape irrigation, or use of a hose outdoors without a shut off nozzle. A water waste prevention ordinance is in place at all times and is not dependent upon a water shortage for implementation.

Goleta Water District Code Section 6.20.070, Waste of Water, prohibits customers from willfully or negligently permitting leaks or wasteful use of water. If a customer is found in violation of this section, GWD may suspend or terminate service to the customer or refuse to resume service until the customer meets certain provisions. In 2013, GWD amended the Code to add Chapter 6.21, Water Shortage Restrictions, establishing increasingly restrictive water use prohibitions during a declared water shortage, and creating additional penalties for wasteful use of water. A copy of the GWD Code is provided in Appendix G.

GWD has also supported the City of Goleta and the County of Santa Barbara in implementation of the California Green Building Code and the updated Model Water Efficient Landscape Ordinance, which require water efficient design in new buildings and landscaping.

Moving forward, GWD will continue to use the Code as both a prevention and enforcement tool to limit water waste within GWD's service area. Staff is also researching the feasibility of implementing other waste prevention methods, as well as the possibility of supporting local ordinances that establish permit requirements for water efficient design in construction and landscaping.

9.2 METERING

All GWD service connections have been metered and billed volumetrically since 1973. In 2014, GWD began implementing an accelerated meter replacement program that will replace existing meters with like-size digital ultrasonic meters that record water use electronically. In contrast to mechanical meters, electronic meters measure volumetric flow extremely accurately at any flow rate, allowing GWD to fully account for water use, reducing unintended water loss, while simultaneously promoting conservation. In 2015, GWD completed phase one of the meter replacement program by replacing and upgrading all 800 large meters 2-inch and greater in size, accounting for approximately 6 percent of all customer meters, and 52 percent of total GWD water consumption. Phase two of the meter replacement program will facilitate replacement of the remaining 16,100 meters with electronic meters. Annual water conservation from phase two of the program is expected to be approximately 350 AFY.

9.3 CONSERVATION PRICING

GWD has a tiered rate structure for its Single Family Residential (SFR) customer class and a uniform rate structure for all other customer classes. Rates are comprised of both variable and fixed charges. Specifically, variable (commodity) charges are based on the volume of water used each month, while fixed service (meter) charges are based on the size of a customer's meter and are also billed each month. Current rates were developed in 2020 following a cost of service analysis and were adopted by the GWD Board of Directors in June 2020.

Increasing tiered commodity rates for SFR customers were designed to encourage conservation, and are based on monthly consumption. SFR customers pay a lower rate for their first six hundred cubic feet (HCF), an intermediate rate for their next 6 HCF, and the top tier rate for all consumption more than 12 HCF in a month. All other customer classes

– multi-family residential, commercial, institutional, and landscape irrigation – receive a uniform urban rate because of the similar characteristics and cost of serving each group.

In 2015, GWD adopted drought surcharges that imposed an additional volumetric fee for each HCF of water used for all customer classes, except for recycled water usage. Drought surcharges applied uniformly to all customers and increased with each elevated stage of a declared water shortage. In 2020, GWD discontinued its use of drought surcharges during periods of declared drought, since forecasted customer demand for the next five years is not expected to be significantly different than the demand levels experienced during the height of the recent historic drought. Water rates are discussed in more detail in Chapter 10.

As reported in GWD's audited Comprehensive Annual Financial Report (CAFR), the percentage of revenues associated with volumetric billing for the past five fiscal years (FY) is summarized in Table 9-1. GWD will continue working to ensure the required portion of revenue from volumetric rates meets the 70 percent threshold.

Table 9-1: GWD Operating Revenues

	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Volumetric Charges	$29,771,141	$28,532,348	$33,222,142	$29,319,501	$22,205,407
Total Operating Revenue	$38,876,872	$37,807,585	$43,161,166	$39,853,124	$33,050,742
% Volumetric	77%	75%	77%	74%	67%

This demand management measure (DMM) is intended to reinforce the need for water agencies to establish a strong nexus between volume-related system costs and volumetric commodity rates and provide an economic incentive to customers to use water efficiently.

9.4 PUBLIC EDUCATION AND OUTREACH

9.4.1 Public Information Programs

GWD's public outreach and community engagement programs are designed to ensure customers have the information, tools, and resources needed to conserve water. Outreach activities include school education programs, booths at local fairs and public events, semi-annual newsletters, regular rebate and conservation-related information updates to its website, informational videos, conservation letters to targeted customers, and development and distribution of public information materials. GWD also partners with the Green Business Program, and works collaboratively with other Santa Barbara County water providers through the countywide Regional Water Efficiency Program (RWEP), which is coordinated by the Santa Barbara County Water Agency (SBCWA). RWEP activities include maintaining the regional conservation website, www.waterwisesb.org, developing radio and TV commercials, implementing the Green Gardener and other education programs, and developing printed media placement and other cohesive outreach materials.

Moving forward, GWD will continue its current public information programs, which will consist of providing conservation and water use information on customer bills, offering tours of the Demonstration Garden, and distributing informative newsletters, flyers and other brochures. It should be noted that since early 2020, public information programs have been severely affected by COVID-19 as residents are advised to stay at home and avoid large gatherings to prevent the spread of the virus. In-person outreach and education programs have been temporarily suspended since March 2020. Public education and outreach programs will resume in accordance with State and local public health guidelines.

9.4.2 School Education Programs

GWD has partnered with RWEP and SBCWA to organize school education programs since 1992. Curriculum workshops and guides are available online at WaterWiseSB.org that allow students to engage in a hands-on learning experience. Classroom materials for students are also available. In addition to classroom materials and activities, two different school assemblies are performed. The first, “H2O, Where Did You Go?” is a musical comedy that teaches students about the water cycle, states of matter, journey of water to their homes, and water conservation. The second, titled “Waterology,” is a musical performance where students learn about the water cycle, water pollution, groundwater and aquifers, stormwater, and the importance of water conservation.

Over the last five years and in partnership with SBCWA, several presentations have been given to schools within the service area. The number of presentations made and total student attendees for each of the last five years are presented below in Table 9-2.

Table 9-2: Summary of School Education Programs

	2016	2017	2018	2019	2020[1]
Presentations	1	5	6	6	0
Attendees	435	600	1,334	1,204	0

Note:

1. In-persons shows were cancelled in 2020 due to the COVID-19 emergency and virtual shows were offered via video instead. Although no classrooms reported watching the videos in 2020, 11 teachers reported utilizing the video lessons in their classrooms with 205 students in January 2021.

Each year since 1998, GWD has partnered with the RWEP to offer high-school students the chance to win awards by creating an entertaining public service announcement for the WaterWise High School Video Contest that conveys the importance of water conservation in Santa Barbara County. The number of videos received by teams of high school students is presented in the table below. First and second place videos were used in spring and summer media campaigns and are played as ads in local movie theaters for other high school students to see.

Table 9-3: Summary of WaterWise High School Video Contest Videos Received

	2016	2017	2018	2019	2020
Videos Received	22	14	16	15	10

Moving forward, GWD intends to continue its school education programs through its partnerships with other local agencies and organizations, and is exploring opportunities to increase participation in school assemblies.

9.5 PROGRAMS TO ASSESS AND MANAGE DISTRIBUTION SYSTEM REAL LOSS

GWD implements a successful water loss program that has earned national recognition through the American Water Works Association (AWWA). Founded in 1881, the AWWA is the largest organization of water supply professionals in the world (www.AWWA.org). GWD was selected to present its exemplary Water Loss Control Program at the Annual National Conference of the AWWA in 2018, which is attended by water purveyors from all over the country and is intended to connect the water sector with innovative solutions and new insights to help solve global water challenges.

Activities undertaken as part of the District’s nationally recognized Water Loss Control Program include rehabilitating and replacing water mains, installing additional valves to manage system pressure, and proactively upgrading large customer meters that account for 53% of total potable demand. These activities limit operational water losses, detect sources of water leakage, and prevent unauthorized uses of water. In 2017 alone, the District had a 45% reduction in pipeline breaks and leaks compared to 2015. The program was vital to conserving water for the community and reducing water loss-related costs during the most recent drought GWD continues its conditions assessment for the District's entire distribution system to prevent corrosion of over 125 miles of steel pipelines and identify problems early. This program is vital to maintaining the District's aging distribution system and providing uninterrupted service to customers, while minimizing the potential for catastrophic water loss and costly repairs from corrosion damage.

Since 2017, GWD has also completed the AWWA water audit each year as reported in Section 3, and will continue to implement its water loss prevention program.

9.6 WATER CONSERVATION PROGRAM COORDINATION AND STAFFING SUPPORT

GWD has a conservation coordinator overseeing the conservation program and implementation activities. The primary responsibilities of the conservation coordinator include designing, developing, and implementing conservation programs for all GWD customers. The coordinator also provides support to customers, including completing water use surveys and reports, answering any questions about conservation programs, and providing printed materials related to GWD's conservation programs.

Over the last five years, the conservation coordinator has developed conservation materials, organized public outreach events, and managed GWD-sponsored customer rebates. In addition, the conservation coordinator has been GWD's representative to the RWEP and has been involved in regional water conservation efforts. In 2015, the District hired a full-time water conservation Compliance Specialist to implement Water Shortage Restrictions and assist with other conservation activities, such as site visits and issuing rebates, during the drought emergency. Moving forward, GWD will continue its current conservation program by maintaining a full-time Conservation Coordinator on staff.

9.7 OTHER

In addition to the DMMs listed above, GWD also offers several programmatic Best Management Practices (BMPs) which include rebate programs and other assistance programs for the three major GWD customer types: residential; commercial, industrial, and institutional (CII); and large landscape. These are categorized and discussed in the following sections.

The COVID-19 public health emergency in California has complicated the District's rebate programs by changing how the District interfaces with its customers. Since the some of the program structures required in-person consultation with District staff and a pre-qualification site visit in close contact with the customer, the District suspended site visits in March 2020 and ceased accepting applications for new projects that would require site visits. For projects that were pre-qualified prior to the declaration of public health emergency, those projects have still continued to be processed with proof of completion submitted electronically by the applicant. Additionally, programs that do not require in person verification and applications and review of submitted supporting documents, such as the Clothes Washer Rebate and Mulch Delivery rebates, have been unaffected. A summary of District rebate programs and current status is provided below.

9.7.1 Residential Programs

Residential users in the GWD service area accounted for approximately 90 percent of customer accounts and 50 percent of total water use in 2020. GWD began re-implementing conservation programs for residential customers in 2000, at which time residential water use accounted for 59 percent of total water use. GWD anticipates continuing to offer these programs to its customers to continue reducing water use throughout its service area.

Residential Assistance Program

GWD staff offers free water “check-ups” that address both indoor and landscape water uses, and include:

- Checking for leaks in bathrooms, kitchen and the laundry area
- Checking showerhead flow rates
- Checking toilet flow rates
- Checking irrigation systems
- Providing suggestions on irrigation scheduling

The number of surveys and devices distributed to customers is summarized in Table 9-.

Table 9-4: Water Surveys and Device Distribution

	2016	2017	2018	2019[1]	2020[2]
Single-Family					
Single Family Residential Surveys	91	122	50	19	2
Multi-Family Residential Surveys	10	2	4	1	0
Commercial Surveys	9	5	10	2	0
Low-Flow Showerheads	500	511	600	0	0
Shower Shut-Off Control Valves	1,175	675	0	0	0
Faucet Aerators	3000	1000	0	0	0
Toilet Flappers	750	750	400	0	0
Toilet Leak Tablets	1500	1500	800	0	0
Garden Hose Nozzles	800	400	500	0	0

Note:

1. Surplus devices were available from previous years and no new devices were purchased.
2. In-person water surveys were temporarily suspended in 2020 due to COVID-19 social distancing.

Conservation staff will continue to implement GWD Code Section 6.20.070, and work with both Administration and Operations staff to ensure that customers are quickly notified when it appears that they may have a leak.

WaterSense and the California Green Building Code for New Residential Development

A US Environmental Protection Agency (EPA) partnership program, WaterSense helps customers identify high-performing, water-efficient products and homes, and provides professional certification programs that embrace and encourage the use of water-efficient design. EPA develops specifications that outline the requirements that products must meet to earn the WaterSense label. In Fiscal Year 2011-12, as part of an update to a Board committee on the 2010 Water Conservation Plan, GWD staff presented a proposal to implement a recognition program for residential construction that meets specifications of the WaterSense program for single-family and multi-family housing. In 2013 GWD became a WaterSense Partner and now has access to promotional outreach and educational materials that are used in social media posts.

GWD supported adoption of the 2010 California Green Building Standards Code, which went into effect January 2011. The Code sets mandatory green building measures, including a 20 percent reduction in indoor water use, as well as dedicated meter requirements and regulations addressing landscape irrigation and design. Local jurisdictions, at a minimum, must adopt the mandatory measures; the Code also identifies voluntary measures that set a higher standard of efficiency, which can also be adopted. In 2011 and 2012, GWD participated on the City of Goleta's Green Ribbon Committee, which established the City of Goleta's Green Building Program that took effect January 1, 2013. Voluntary for most types of projects, the goal of the program is to increase awareness of, and access to, green building resources and encourage the incorporation of green building measures into the design, construction, and maintenance of buildings.

Additional Residential Programs – Landscape

In 2011, the GWD offered a Smart Landscape Rebate Program (SLRP) to residential, commercial, and landscape irrigation customers to replace water thirsty landscapes and inefficient irrigation with water-wise plants and irrigation. Rebates granted through this program cover up to 50 percent of the cost of pre-authorized irrigation equipment, water-wise plants and mulch, and/or smart irrigation controllers up to $1,000. The program was funded by a grant from the USBR, in partnership with the SBCWA and RWEP partners. The program was reinstated in late 2014 with USBR funding through SBCWA and direct funding from GWD. Since 2014, the District has issued 910 rebates to single-family, multi-family, commercial and landscape irrigation customers that have implemented water wise landscape upgrades at a total cost of $652,154. The SLRP program has produced a cumulative water savings of 745 AF, which with the cost of the program equates to $875 per acre-foot of water saved. As noted above, while the District suspended new pre-qualification visits effective March 2020 due to the COVID-19 emergency, the District continues processing post-installation submissions remotely for customers that were pre-qualified and had site visits prior to the program's suspension.

GWD also supports Green Gardener and Ocean-Friendly Gardens Workshops that provide education on water-efficient residential and commercial gardening. GWD has continued to implement its Smart Landscape Rebate program since that time.

9.7.2 Commercial, Industrial and Institutional (CII)

GWD offered a Water Saving Incentive Program (WSIP) up until 2020 to assist CII customers in achieving water savings. The program provided rebates for installation of water saving materials specific to each customer site. The program enabled commercial customers to achieve water efficiency through individualized projects. By conserving water, these projects encourage efficient use of water resources and improve water supply reliability. The program was previously open to all commercial, industrial, institutional, agricultural and large landscape customers with qualifying projects within the GWD service area. GWD assisted large customers in their implementation of fixtures/equipment on the CII demonstrated savings list, including:

- High efficiency toilets
- High efficiency urinals
- Ultra-low volume urinals
- Zero consumption urinals
- Commercial high efficiency single load clothes washers
- Cooling tower conductivity controllers
- Cooling tower pH controllers

- Connectionless food steamers
- Medical equipment steam sterilizers
- Water efficient ice machines
- Pressurized water brooms
- Dry vacuum pumps

As of June 30, 2020 the cumulative water savings for the eleven full rebates completed under the WSIP is 110 AF, at a cost of $260 per AF of water saved under the program. Due to lack of customer demand, the program was suspended in 2020.

In addition, GWD sponsors and assists with the Santa Barbara Green Business Program, where GWD provides free water check-ups and services required as part of program certification. Through these efforts, GWD identifies where and how the measures listed above may be implemented for CII customers, and confirms installations. GWD's commercial customers receive:

- Checks for leaks in indoor fixtures
- Checks for fixture flow rates
- Checks for toilet flow rates
- Checks of irrigations systems
- Suggestions on irrigation scheduling

Furthermore, GWD serves on the UCSB Chancellor's Sustainability Subcommittee on Water. This subcommittee is tasked with assisting UCSB in protecting and conserving water resources with an emphasis on reducing potable water consumption on campus.

9.7.3 Large Landscape

GWD offers water surveys for large landscape areas with dedicated irrigation meters, and has offered rebates to all customers for installation of efficient irrigation equipment and plantings. Since implementation of the programs began in 2014 through June 30, 2020, the District has issued 22 large rebates under the SLRP.

10. WATER SHORTAGE CONTINGENCY PLAN

Ways in which water supplies may be interrupted or reduced significantly include a drought that limits supplies, an earthquake that damages water delivery or storage facilities, a regional power outage, or a toxic spill that affects water quality. This section of the UWMP describes how GWD plans to respond to such emergencies so that customer needs are met promptly and equitably.

GWD completed a comprehensive update of the Drought Preparedness and Water Shortage Contingency Plan (WSCP) in 2014 and again in 2021 (Appendix H). Included in the WSCP is a draft Water Shortage Ordinance that provides a framework and guides GWD actions in the event of a water shortage emergency.

The WSCP lays out various methods for mitigating the effects of water shortages of increasing intensity in five stages.[7] The objectives of the WSCP are to describe, in a single resource, the conditions that constitute a water shortage emergency, to define and discuss the various stages of action, and to provide guidance and procedures to undertake during a declared water shortage. The WSCP includes a plan for action at each of the five stages of water shortages. Before the 2014 WSCP was finalized, on March 11, 2014, the GWD Board of Directors declared a Stage I Water Shortage consistent with the criteria in the 2010 UWMP due to the state-wide water shortage emergency. Following the adoption of the 2014 WSCP, the GWD Board declared a Stage II (September 2014) and Stage III (May 2015) Water Shortage Emergency, and adopted water use restrictions for each water shortage stage, which were incorporated into the District Code, as summarized in Table 10-1. In April 2019, the GWD Board ended the Stage II and III Water Shortages and declared a Stage I Water Shortage, which was terminated four months later in August 2019. All resolutions and ordinances listed in Table 10-1 are included in Appendix H.

Table 10-1: Drought Stage Declarations and Restrictions Timeline

Action	Date	Resolution /Ordinance
Stage I Water Shortage declared	March 11, 2014	Resolution No.2014-08
Stage II Water Shortage declared	September 9, 2014	Resolution No 2014-31
Stage II water use restrictions codified	September 9, 2014	Ordinance No. 2014-01
Stage III, IV, and V water use restrictions codified	January 13, 2015	Ordinance No. 2015-02
Stage III Water Shortage declared	May 12, 2015	Resolution No. 2015-20
Stage III, IV, and V water use restrictions modified	May 12, 2015	Ordinance No. 2015-03
Stage II and III Water Shortage terminated, and Stage I Water Shortage declared	April 9, 2019	Resolution No. 2019-07
Stage I Water Shortage terminated	August 13, 2019	Resolution No. 2019-16

[7] Per the 2020 UWMP guidelines, suppliers are now required to include six standard shortage levels corresponding to progressive ranges in their Water Shortage Contingency Plans (WSCPs). However, suppliers may also continue using their own water shortage levels as long as a clear relationship to the six standard water shortage levels is included. The GWD decided to retain the original five stage approach included in the 2014 WSCP which has proven effective in achieving necessary demand reductions.

10.1 PLANNING

To meet short-term water demand deficiencies, and short- or long-term droughts in the communities it serves, GWD has implemented several precautionary methods to maximize water supply reliability and ensure uninterrupted water service. GWD maintains several water reservoirs for daily operations, firefighting, and other emergencies. Much of the system has been designed to operate by gravity, minimizing the need for electricity. Water from Lake Cachuma, GWD's primary supply source, flows by gravity through the Santa Ynez Mountains via the Tecolote Tunnel to reach GWD's distribution system without the need for electrical power. GWD uses backup generators at its three main booster pump stations, the CDM WTP, and headquarters to ensure continued service in the event of power blackouts or other emergencies. GWD has two mobile emergency generators that can be used to provide electrical power to groundwater wells. Fuel storage tanks allow GWD to operate its system for extended periods on emergency power.

As described in Chapter 5, GWD maintains a diverse water supply portfolio. If one source of supply is affected by an emergency, GWD can use one of its other sources to serve customers. In addition, consistent with the SAFE Ordinance, GWD maintains a drought buffer in the Goleta Groundwater Basin for use during drought years. The drought buffer can only be used for delivery to existing customers when a drought on the South Coast causes a reduction in GWD's annual deliveries from Lake Cachuma and cannot be used as a supplemental supply for new or additional water demand. Further, when a new service is connected, the annual storage commitment for the drought buffer must permanently increase by 2/3 of the new demand, ensuring the drought buffer expands as demand increases. In times of drought, SAFE prohibits new potable water allocations, providing another measure to protect against water shortages.

In the event of an emergency, GWD will report continuously and, in certain situations, may collaborate with the City of Goleta and the Santa Barbara County Office of Emergency Services. If local resources are overwhelmed by a disaster, regional protocol enables the County of Santa Barbara Office of Emergency Services to contact the State of California Governor's Office of Emergency Services for assistance.

10.1.1 Water Supply Reliability Analysis

GWD regularly assesses water supply reliability to identify key issues that may create a shortage condition. Cachuma and SWP supplies, for example, are vulnerable to droughts. During the last historic drought, DWR announced a zero allocation for all SWP contractors for the first time in history in 2014, and GWD received a zero allocation of Cachuma water for the 2015-2016 WY. Catastrophic events and natural disasters like earthquakes also pose a threat to the SWP conveyance system and the levee system that prevents seawater intrusion in the Bay Delta, the source of SWP water supplies. The SWP is also vulnerable to the evolving environmental and regulatory issues in the Sacramento Delta. In contrast, groundwater supplies from the Basin are generally reliable and resilient to drought conditions. The sudden presence of a contaminant in the Basin could lead to groundwater supply shortages in the service area; however, the probability of this event occurring is very low and the District does not anticipate significant or immediate changes in groundwater quality. Recycled water is also a reliable and climate-resilient supply and there are no significant issues that may create a shortage condition for this supply source. Chapter 5 of this UWMP further details the potential threats to water supply that could lead to a shortage.

10.1.2 Seismic Risk Assessment and Mitigation Plan

In 2019, GWD prepared an Amendment to the County of Santa Barbara's Multi-Jurisdictional Hazard Mitigation Plan. The Goleta Water District's Multi-Jurisdictional Local Hazard Mitigation Plan Amendment (Amendment) documents potential hazards from natural disasters, including earthquakes, and specific projects that could mitigate future losses. According to the Amendment, GWD is located in a high seismic activity zone approximately 44 miles southwest of the San Andreas Fault. The Goleta Valley is also potentially susceptible to earthquakes from the offshore and onshore fault system. GWD's ability to serve water is at risk if an earthquake were to collapse the Tecolote Tunnel that conveys water from Lake Cachuma and the State Water Project to the South Coast. GWD's transmission mains and facilities are also at risk for collapse and damage, which could lead to water quality problems. Furthermore, an earthquake could lead to power outages, which would impact GWD's ability to operate groundwater wells and pump stations that depend on electricity.

Although the timing of earthquakes cannot be predicted, the GWD employs a number of proactive mitigation strategies. Examples of GWD's mitigation strategies include:

- Installing and maintaining isolation valves and interconnections with the neighboring water utility.
- Building in and designing "back up" and redundant infrastructure, such as back-up pumps and motors.
- Securing geotechnical analysis of soil stability and susceptibility to future landslides and failure.
- Performing visual inspections of critical main transmission lines.
- Surveying all pipeline creek crossings in the GWD's service area.
- Purchasing and maintaining equipment and inventory needed for emergency replacements of infrastructure.
- Inspecting facilities after small earthquakes for noticeable damage.

The Amendment documenting seismic risk and mitigation strategies is included in Appendix I.

10.2 STAGES OF ACTION TO RESPOND TO WATER SHORTAGES

The WSCP lays out five stages to implement during a declared water shortage emergency. The WSCP includes voluntary and mandatory water use restrictions designed to reduce discretionary water use depending on the cause, severity, and anticipated duration of the supply shortage. Table 10-2 presents the stages of GWD's WSCP.

Per the 2020 UWMP guidelines, suppliers are now required to include six standard shortage levels corresponding to progressive ranges (up to 10-, 20-, 30-, 40-, 50- percent, and greater than 50-percent shortage compared to the normal reliability condition) in their WSCPs. However, suppliers are also authorized to continue using their own water shortage levels that were included in past WSCPs as long as a graphic showing the relationship to the six standard water shortage levels is included. The WSCP maintains the original five stage approach which has proven effective in achieving necessary demand reductions. Figure 10-1 provides a "crosswalk" that translates the GWD's existing shortage levels to those mandated by statute.

Stage V of the WSCP indicates actions that would be taken in the event of a 50 percent or greater reduction in water supplies. A 50 percent or greater loss of supplies could be caused by a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster. Catastrophic supply interruptions occur suddenly and can immediately jeopardize the water supply. If such an interruption would occur, GWD would respond with immediate implementation of Stage V of the WSCP, and in accordance with the GWD Emergency Response Plan (ERP). The District's ERP underwent a comprehensive update in 2014 and is designed to work in conjunction with the ERPs of both Santa Barbara County and the State of California. The ERP outlines different triggers and response actions to all types of emergency incidents related to GWD and public emergencies, allowing for added proactive risk mitigation and enhanced emergency preparedness.

Table 10-2: Stages of Water Shortage Contingency Plan

Stage	Percent Shortage Range	Water Shortage Condition
I	10-15%	If any of the following occur: • District water supply is 85 to 90% of normal (10-15% supply deficiency) for the next 12 months. • District water supply is insufficient to provide 80% of normal deliveries for the next 24 months. • Contamination of 10% of water supply (pollutant exceeds primary drinking water standards).
II	16-25%	If any of the following occur: • District water supply is 75 to 85% of normal (16-25% supply deficiency) for the next 12 months. • District water supply is insufficient to provide 75% of normal deliveries for the next 24 months. • Contamination of 20% of water supply (pollutant exceeds primary drinking water standards).
III	26-35%	If any of the following occur. • District water supply is 65 to 75% of normal (26-35% supply deficiency) for the next 12 months. • District water supply is insufficient to provide 65% of normal deliveries for the next 24 months. • Contamination of 30% of water supply (pollutant exceeds primary drinking water standards).
IV	36-45%	If any of the following occur. • District water supply is 55 to 65% of normal (36-45% supply deficiency) for the next 12 months. • District water supply is insufficient to provide 55% of normal deliveries for the next 24 months. • Contamination of 40 % of water supply (pollutant exceeds primary drinking water standards).
V	46% and higher	If any of the following occur. • District water supply is less than 55 % of normal (46% or higher supply deficiency) for the next 12 months. • District water supply is insufficient to provide 50 % of normal deliveries for the next 24 months. • Contamination of 50% or more of water supply (pollutant exceeds primary drinking water standards). • Unanticipated loss of water distribution or supply facilities due to disaster or man-made emergencies.

Figure 10-1: Relationships Between GWD's Existing Shortage Levels and the 2020 WSCP Mandated Shortage Levels

Stage	Percent Shortage Range	Water Shortage Condition
I	10-15%	If any of the following occur: • District water supply is 85 to 90% of normal (10-15% supply deficiency) for the next twelve months. • District water supply is insufficient to provide 80% of normal deliveries for the next twenty four months. • Contamination of 10% of water supply (pollutant exceeds primary drinking water standards)
II	16-25%	If any of the following occur: • District water supply is 75 to 85% of normal (16-25% supply deficiency) for the next twelve months. • District water supply is insufficient to provide 75% of normal deliveries for the next twenty four months. • Contamination of 20% of water supply (pollutant exceeds primary drinking water standards)
III	26-35%	If any of the following occur: • District water supply is 65 to 75% of normal (26-35% supply deficiency) for the next twelve months. • District water supply is insufficient to provide 65% of normal deliveries for the next twenty four months. • Contamination of 30% of water supply (pollutant exceeds primary drinking water standards)
IV	36-45%	If any of the following occur: • District water supply is 55 to 65% of normal (36-45% supply deficiency) for the next twelve months. • District water supply is insufficient to provide 55% of normal deliveries for the next twenty four months. • Contamination of 40% of water supply (pollutant exceeds primary drinking water standards)
V	46% and higher	If any of the following occur: • District water supply is less than 55% of normal (46% or higher supply deficiency) for the next twelve months. • District water supply is insufficient to provide 50% of normal deliveries for the next twenty four months. • Contamination of 50% or more of water supply (pollutant exceeds primary drinking water standards) • Unanticipated loss of water distribution or supply facilities due to disaster or man-made emergencies

2020 WSCP Level	Shortage Level
I	<10%
II	10 – 20 %
III	20 – 30%
IV	30 – 40%
V	40 – 50%
VI	> 50%

10.2.1 Shortage Response Actions and Demand Reduction Program

GWD demand reduction programs are described in Chapter 9 of this UWMP. GWD maintains an active conservation program, and is an ongoing partner in Santa Barbara County's Regional Water Efficiency Program. A strong focus on customer incentives, such as waterwise landscape rebates, courtesy customer water surveys, and a focus on public outreach activities, helps to achieve water conservation goals during periods of normal supply, and provides a foundation for reducing customer demand during water shortages.

As previously stated, DWR has prescribed standard six water shortage levels. Though GWD maintained the existing five stage approach in its WSCP, Table 10-3 presents a crosswalk that aligns GWD's five stage shortage response actions to DWR's six standard water shortage levels. Table 10-4 summarizes WSCP stages and associated consumption reduction methods, the expected decreases in supply and demand gaps, and whether water use restrictions are enforced.

Table 10-3: DWR Table 8-1: Water Shortage Contingency Plan Levels

Stage	Percent Shortage Range	Shortage Response Action
I	Up to 10%	Goleta WSCP Stage 1 (15%). Public information campaign, accelerated audit and incentive programs for agriculture, large customers, and irrigation accounts, complementary water audits, customer leak notifications, reduced flushing, and shutting off District fountains.
II	Up to 20%	Goleta WSCP Stage 1 (15%). Public information campaign, accelerated audit and incentive programs for agriculture, large customers, and irrigation accounts, complementary water audits, customer leak notifications, reduced flushing, and shutting off District fountains.
III	Up to 30%	Goleta WSCP Stage 2 (25%). Expand public information campaign, restrict irrigation days/times, no potable water for decorative fountains, large landscape water budgets, promote leak detection, prohibit refilling pools, conservation signage in hotels/motels/gyms.
IV	Up to 40%	Goleta WSCP Stage 3 (35%). Expand public information, further restrict irrigation times, reduce landscape water budgets, implement drought rates, intensity leak detection and repair, increase water waste enforcement.
V	Up to 50%	Goleta WSCP Stage 4 (45%). Prohibit median strip irrigation with potable water, limit potable water use on golf courses, prohibit filling new pools/spas, limit landscape watering to 1 day/week hand watering, prohibit turf irrigation with potable water, increase staff.
VI	> 50%	Goleta WSCP Stage 5 (>50%). No water for irrigation or recreational purposes. Close public pools. Increase drought rates, penalties and enforcement. Implement emergency response plan as needed.

Table 10-4: DWR Table 8-2: Demand Reduction Actions

Stage	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge or Other Enforcement?
I	Expand Public Information Campaign	5%	Includes development of a Water Shortage Declaration media kit and conservation related billing statement messages	Yes
I	Offer Water Use Surveys	4%	Identifies largest water users in each sector and contacts for complementary water audits	Yes
I	Other	1%	Provides water conservation hotline to allow reporting of water waste	Yes
I	Provide Rebates for Landscape Irrigation Efficiency	2%	Accelerates audit and incentive programs for irrigation	Yes
I	Other	1%	Accelerates audit and incentive programs for agriculture and large customers	Yes
I	Other	2%	Identifies and notifies customers of possible leaks	Yes

Stage	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge or Other Enforcement?
I	Other	1%	Encourages use of drip irrigation and drought tolerant plants	Yes
I	Decrease Line Flushing	0.3%	Reduces water usage for main flushing, street flushing, and hydrant flushing	Yes
I	Reduce System Water Loss	0.3%	Intensifies maintenance efforts to identify and correct water leaks in the distribution system	Yes
II	Expand Public Information Campaign	0.0%	Includes targeted outreach to customers with large landscapes and customer education on how to perform regular household meter reading and leak detection	Yes
II	Pools and Spas - Require covers for pools and spas	1%	Encourages the use of pool covers when not in active use	Yes
II	Other	2%	Promotes meter reading and leak detection by all customers	Yes
II	Lodging establishment must offer opt out of linen service	1%	Encourages posting of notice of shortage conditions and daily linen washing only if requested at hotels, motels, and other lodgings	Yes
II	Other	1%	Encourages shorter showers in gyms, athletic clubs, and public pools	Yes
II	Other - Prohibit use of potable water for washing hard surfaces	1%	No washing down of sidewalks, driveways, parking lots, or other hardscapes except to protect public health and safety	Yes
II	Water features - restrict water use for decorative water features.	1%	Potable water not to be used to clean, fill, or maintain levels in decorative fountains, with certain exceptions	Yes
II	Landscape - Limit landscape irrigation to specific times	1%	Manual irrigation of outdoor landscape may only take place before 10:00 a.m. or after 4:00 p.m. no more than two days a week. Outdoor landscape irrigation through the use of a fixed irrigation system at residential properties may only take place on Wednesdays and Saturdays before 7:00 a.m. and after 7:00 p.m Outdoor landscape irrigation through the use of a fixed irrigation system at commercial and institutional properties may only take place on Tuesdays and Fridays before 7:00 a.m. and after 7:00 p.m. 4. Necessary irrigation of public recreation and athletic fields may occur on no more than 4	Yes

Stage	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge or Other Enforcement?
			days a week between the hours of 7:00 p.m. and 7:00 a.m. 5. Irrigation of golf courses may occur between the hours of 7:00 p.m. and 7:00 a.m	
II	Landscape - Limit landscape irrigation to specific days	2%	Restrict landscape watering to no more than two days per week (as noted in the row above)	Yes
II	Landscape - Other landscape restriction or prohibition	1.3%	Encourage large landscapes to adhere to water budgets	Yes
II	Other water feature or swimming pool restriction	0.3%	Prohibit draining and refilling of swimming pools	Yes
III	Expand Public Information Campaign	0.0%	Includes publishing monthly demand charts in local newspaper or on the District website, and considering hiring a third party to assist with the launch of a major publicity campaign	Yes
III	Other	0.7%	Encourages all commercial customers to prominently post water shortage signage with specified language at specified locations	Yes
III	Increase Water Waste Patrols	1.6%	Increased field staff	Yes
III	Landscape - Limit landscape irrigation to specific times	1.7%	Further restrict designated times for irrigation.	Yes
IV	Landscape - Prohibit certain types of landscape irrigation	1.2%	Prohibit irrigation of roadway median strips with potable water. Limit use of potable water on golf courses.	Yes
IV	Landscape - Limit landscape irrigation to specific days	1.7%	Restrict landscape watering to no more than one day per week	Yes
IV	Landscape - Prohibit certain types of landscape irrigation	3.0%	Prohibit irrigation of turf/lawn with potable water. Prohibit use of sprinklers (hand watering only).	Yes
IV	Other water feature or swimming pool restriction	0.2%	Prohibit filling of new swimming pools, spas, and hot tubs.	Yes
IV	Other	0.1%	Prohibit on-site vehicle washing such as company fleets, dealer lots, etc.	Yes
IV	Expand Public Information Campaign	0.0%	Includes implementing major publicity campaign initiated during Stage III and provides regular media briefings and updates on supply situation	Yes

Stage	Demand Reduction Actions	How much is this going to reduce the shortage gap?	Additional Explanation or Reference	Penalty, Charge or Other Enforcement?
IV	Increase Water Waste Patrols	1.4%	Implements 24/7 enforcement of demand reduction programs, install flow restrictor, and/or facilitate shut offs	Yes
V	Prohibit all Landscape Irrigation	8.6%	Prohibit all outdoor irrigation except recycled water or gray water	Yes
V	No water for recreational purposes	0.4%	Examples include camping, water parks, and other water used for recreation	Yes
V	Close public pools	0.1%	Public pools must be closed	Yes
V	Increase Water Waste Patrols	0.9%	Coordinate with law enforcement for demand reduction enforcement challenges.	Yes

Drought years may also trigger additional supply augmentation methods to decrease any gap between supply and customer water use. These water supply augmentation methods are generally short-term management objectives that differ from the long-term new water supply development or supply reliability enhancement projects identified in Chapter 5. Table 10-5 summarizes WSCP stages, associated supply augmentation methods, and expected reductions in supply and demand gaps.

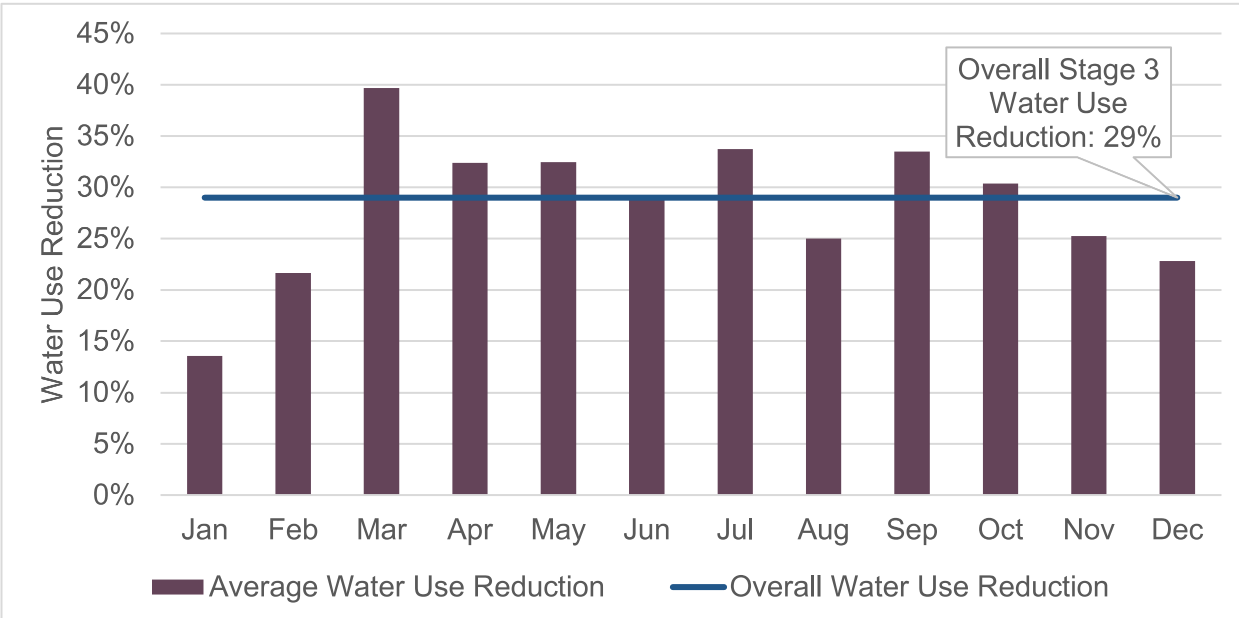
Table 10-5: DWR Table 8-3: Supply Augmentation and Other Actions

Stage	Supply Augmentation Methods and Other Actions by Water Supplies	How much is this going to reduce the shortage gap?	Additional Explanation or Reference *(optional)*
III	Other	4%	Implement drought rates and increased penalty fees
V	Other	1%	Increase drought rates and penalty fees.

10.2.2 Estimated Supply and Demand Gap Reduction

During the recent drought, GWD declared a Stage III water shortage from May 2015 through March 2019 and implemented the associated public outreach, demand reduction, and operational actions. Average savings achieved in each month during the timeframe for which the Stage III shortage declaration was in effect are shown in Figure 10-2. Overall, during the nearly 4-year period for which the shortage declaration was in effect, GWD achieved a savings of 29% as compared to the 2013 base period, well within the range of 26% to 35% savings needed during a Stage III shortage. On a monthly basis, water use reductions were greatest during the spring and summer months as compared to the same months in the base period, which was anticipated due to the effect of outdoor water use restrictions on demand during these months. The effectiveness of water use restrictions in achieving demand reductions may change over time as a result of factors such as demand hardening from ongoing water conservation activities and changes in water use among customer categories.

Figure 10-2: Monthly Water Use Reductions Achieved During Stage III Water Shortage (May 2015 – March 2019



10.2.3 Priority by Use

Priority for use of available potable water during shortages is based on the legal requirements set forth in the California Water Code, Sections 350-358. Accordingly, water use reduction targets and allocations discussed below have been established according to the following ranking system in this Plan (listed from highest to lowest priority):

1. **Health and Safety.** Minimum health and safety allocations for interior residential needs (includes single-family residential, multi-family residential, hospitals and convalescent facilities, retirement and mobile home communities, students housing, firefighting, and public safety). Based on DWR guidance, GWD assumes an allocation of 37.5 up to 68 gallons per person per day for health and safety.

2. **Business.** Commercial, industrial, institutional/governmental operations (where water is used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and economic base of the community (not for landscape use).

3. **Irrigation – Permanent.** Permanent agriculture (orchards, vineyards, and other commercial agriculture which would require at least five years to return to production).

4. **Irrigation – Annual.** Annual agriculture (floriculture, strawberries, other truck crops).

5. **New connections.** The SAFE Ordinance prohibits the District from making new potable water allocations during times of drought.

10.3 PENALTIES FOR EXCESSIVE USE

GWD enforcement always begins with education regarding the restrictions and information about tools and resources available to assist customers in conserving water and complying with rules; however, GWD may use penalty fees as an additional enforcement tool. GWD Code Chapter 6.21.050 describes the enforcement process for the WSCP and authorizes the fines and penalties described therein for violations of the WSCP during a declared water shortage emergency. Administrative penalties (fees) may apply in situations involving a violation of water use restrictions, and increase in severity based on the number of previous warnings and/or violations. In addition to fees, the GWD may install flow restrictors that will provide the minimum water flow needed for health and safety purposes. In these extreme cases of repeated violations, the customer will be charged a fee to cover the cost of installation of the flow restrictor. The flow restrictor will remain in place for a period of time to be determined by the general manager, and the customer is responsible for paying the cost of removal of the device. The GWD will not use flow restrictors where fire suppression sprinklers are on the same line as the water provided for domestic purposes. Penalties for excessive water use are summarized in Table 10-6.

Table 10-6: Penalties for Excessive Use

Stage	First Violation	Second Violation	Third Violation	Fourth Violation	Subsequent Violations
I	Written warning	Written warning	Written warning	Written warning	Written warning
II	Written warning	Notice of Violation	Fine of $100	Fine of $250	Fine of $500, potential flow restrictor installation
III	Written warning	Notice of Violation	Fine of $100	Fine of $250	Fine of $500, potential flow restrictor installation
IV	Written warning	Notice of Violation	Fine of $100	Fine of $300	Fine of $500, potential flow restrictor installation
V	Written warning	Notice of Violation	Fine of $500	Fine of $750	Fine of $1,000, potential flow restrictor installation

10.4 FINANCIAL IMPACTS OF ACTIONS DURING SHORTAGES

Prior to July 1, 2015, GWD's rate structure did not provide for surcharges or other mechanisms to address drought-related costs and lower water commodity sales during a drought. To mitigate the financial effects of drought, GWD prepared a Cost of Service Study and implemented a new rate structure that went into effect July 1, 2015. The new rate structure included a drought surcharge that was billed on an HCF basis to provide adequate revenue at various drought stages and meet standard operating costs plus additional drought-related expenses.

In 2020, GWD prepared another Cost of Service Study which resulted in the discontinued use of Drought Surcharges during periods of declared drought since forecasted customer demand for the next five years is not expected to be significantly different than the demand levels experienced during the height of the recent historic drought.

A standard methodology was used to develop GWD's rates:

- Developed a financial plan to determine GWD revenue requirements for the next five years.
- Performed a cost of service analysis utilizing the Base-Extra Capacity methodology.
- Developed commodity rates and fixed monthly service charges (known as meter charges) based on normal customer water use demand.

GWD's current rate structure provides for financial stability in normal conditions and at each stage of water shortage emergency. The lead-time required to implement new rates is typically about one year to ensure compliance with state legal requirements regarding public water utility rates. Should any unusual circumstances negatively affect GWD finances, GWD will rely on reserves until updated rates can be implemented.

The Cost of Service Study estimates that in a normal year, 67 percent of revenue will come from commodity rates. This source of revenue is subject to fluctuation based on actual customer water use. The monthly service fee, known as the meter charge, provides the remaining 30 percent of GWD revenues. This is within the industry best practice recommendation that no more than 30 percent of costs be recovered through a fixed charge to ensure pricing structures provide a conservation incentive. The meter charge recovers a portion of the fixed costs of the water system such as customer service, meter maintenance, and peaking (or capacity) costs.

10.5 IMPLEMETATION

This Section provides methods for implementing the WSCP, including compliance with annual water supply and demand assessments, communication protocols, monitoring and reporting procedures, and future WSCP updates.

10.5.1 Annual Supply and Demand Assessment

Beginning 2022, the GWD will be required to prepare and submit an annual water supply and demand assessment (Annual Assessment) to DWR by July 1 of every year. The focus of the Annual Assessment is to evaluate actual forecasted near-term water supply conditions (for the next 12 months), followed by a dry year, and determine if a water shortage is imminent. This evaluation will ensure appropriate shortage response actions are implemented in a timely manner as needed to produce expected demand response or supply enhancement outcomes. The Annual Assessment will be consistent with DWR's Annual Assessment guidance document that is currently being developed by DWR and anticipated to be available to water suppliers by the first Annual Assessment deadline.

For the purposes of this analysis, a dry year is considered an annual period of low rainfall either locally or statewide, which may result in reduced water supplies. Notably, in addition to precipitation, streamflow, groundwater levels, and reservoir levels are used to project potential water shortages and will therefore be used to define the characteristics of a dry year. Particularly if a year is preceded by dry year(s) or drought recovery is underway following a recent drought, a water shortage corresponding to the water shortage levels described in Section 10.2 is more likely to be triggered.

The Annual Assessment will rely on GWD's water supply and demand model, described in the WSCP, to determine the potential for a supply shortage in the current year (next 12 months) and the following year (next 24 months), and the severity of the water supply shortage based on current trends in demand and supply availability. To assess reliability, the Annual Assessment will evaluate water supply, any relevant infrastructure capabilities and constraints, unconstrained customer demand, and planned water use for current year considering dry subsequent year. Specific procedures for the development of the Annual Assessment are outlined in the WSCP.

10.5.2 Communication Protocols

A well-informed public is generally more willing to respond to requests to voluntarily conserve or alter water use patterns and will be more likely to comply if mandatory water use restrictions become necessary. Public information campaigns support voluntary and mandatory reduction measures by educating the public on any current or anticipated shortages and providing guidance on water conservation. The WSCP details the protocols and procedures that GWD will implement at each stage of a declared water shortage to help water users comply with the shortage response actions. Public outreach efforts are expanded for each level of water shortage to achieve greater water demand reductions. Proposed outreach includes, but is not limited to, social media posts, bill inserts or newsletters, flyers and post-cards, presentations at community events, targeted outreach via mail and phone, and press releases.

10.5.3 Monitoring and Reporting

Monitoring and reporting key water use metrics is fundamental to water supply planning and management. Actively monitoring the effectiveness of the WSCP is also essential to ensure that the response actions are achieving their intended water use reduction purposes, or whether improvements or new actions need to be considered. Monitoring for customer compliance tracking is also useful in enforcement actions. This section describes metrics currently monitored by GWD, as well as procedures for reporting the metrics to the State.

Under normal water supply conditions, potable water production figures are recorded daily. GWD provides monthly water production totals in the monthly report submitted to the State Department of Health Services. A monthly water production report is also provided to the GWD Water Management and Long Range Planning (WMLRP) Committee, which is composed of two GWD Board members, and a comprehensive water supply and demand update is provided quarterly. During a drought or water shortage emergency, the following additional measures are taken to monitor WSCP effectiveness:

- Production figures are more closely monitored to ensure that reduction targets are being met and potential leaks are addressed in a timely manner.
- Internal weekly meetings with the drought task force (a subset of the water shortage response team) allow staff and management to monitor water supply availability, systemwide production, and customer class demand during declared water shortages, and determine whether additional actions are necessary or more severe stages are anticipated.
- A detailed drought update report (in addition to the water production report) is presented to the WMLRP Committee monthly, and the full Board of Directors quarterly, to ensure GWD decision-makers remain informed and prepared to take appropriate actions where necessary.
- A detailed log of approved customer exceptions to restrictions, water use observations, customer conservation hotline reports, and violations is maintained and reported to the Water Supply and Conservation Manager and drought task force weekly. A map tracking the exceptions and violations is updated regularly.

GWD uses total production (excluding recycled water) to determine system-wide reductions in water use and whether conservation targets associated with the relevant water shortage stage are achieved. Customer consumption data recorded by water meters is compiled and analyzed on a monthly basis to track the change in use among various customer classes. This level of analysis allows GWD to identify where additional savings can be achieved, and develop targeted programs and outreach strategies to further reduce demand. If demand reductions consistently fall short of the target and water shortage thresholds are triggered, the GWD Board of Directors may declare increasingly severe water shortage stages and associated demand management programs to accomplish the necessary reductions.

At the time this Plan is being updated, DWR is in the process of preparing guidelines for monthly reporting of water production and other water uses to the State, along with associated enforcement metrics. Reporting to DWR will be consistent with future regulation for monthly reporting.

10.5.4 Plan Refinement Procedures

The WSCP is an adaptive management plan that is designed to be responsive to the effectiveness of water shortage actions during a declared water shortage. As such, the WSCP is subject to adjustments and refinements as needed to ensure that actions are appropriate and effective. WSCP updates are generally presented in reports to the WMLRP Committee on a monthly basis, and to the Board of Directors on a quarterly basis, to ensure GWD decision-makers remain informed and prepared to take appropriate actions where necessary. Additionally, under a declared or anticipated water shortage, GWD will convene its regular drought task force meetings to monitor water supplies, demand, and the effectiveness of any actions being implemented. When updates are needed, GWD will refine the WSCP and provide updated information to the Board of Directors for approval.

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APPENDIX A: UWMP CHECKLIST AND TABLES

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Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
Add additional rows as needed			
4210004	Goleta Water District	16,979	11,616
TOTAL		16,979	11,616

**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable* (select from drop down list)
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES:			

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesaler
☑	Supplier is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES:	

Submittal Table 2-4 Retail: Water Supplier Information Exchange
The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.
Wholesale Water Supplier Name
Add additional rows as needed
Central Coast Water Authority
Cachuma Operation and Maintenance Board
NOTES:

Submittal Table 3-1 Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045*(opt)*
City of Goleta	32,200	32,500	33,100	33,700	34,300	
Unincorporated Santa Barbara	52,262	53,066	53,687	54,491	55,295	
NOTES:						

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable Water - Actual			
Use Type	2020 Actual		
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume*
Add additional rows as needed			
Single Family		Drinking Water	3,509
Multi-Family		Drinking Water	1,814
Commercial		Drinking Water	1,494
Institutional/Governmental		Drinking Water	399
Landscape		Drinking Water	433
Agricultural irrigation		Drinking Water	1,310
Agricultural irrigation		Raw Water	1,041
Sales/Transfers/Exchanges to other Suppliers		Drinking Water	0
Groundwater recharge		Drinking Water	0
Losses			623
		TOTAL	10,623

****** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 4-2 Retail: Use for Potable and Non-Potable Water - Projected						
Use Type	Additional Description (as needed)	Projected Water Use* *Report To the Extent that Records are Available*				
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2025	2030	2035	2040	2045 (opt)
Add additional rows as needed						
Single Family		3,254	3,300	3,354	3,407	
Multi-Family		1,899	1,927	1,957	1,989	
Commercial		1,700	1,856	1,986	2,056	
Industrial		0	0	0	0	
Institutional/Governmental		800	1,010	1,010	1,010	
Landscape		445	445	445	445	
Agricultural irrigation		2,128	2,129	2,129	2,128	
Groundwater recharge		0	0	0	0	
Sales/Transfers/Exchanges to other Suppliers		0	0	0	0	
Losses		640	658	680	702	
	TOTAL	10,866	11,325	11,561	11,737	
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)

	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable *From Tables 4-1R and 4-2 R*	10,623	10,866	11,325	11,561	11,737	
Recycled Water Demand [1] *From Table 6-4*	729	768	772	772	772	
Optional Deduction of Recycled Water Put Into Long-Term Storage[2]						
TOTAL WATER USE	11,352	11,634	12,097	12,333	12,509	

[1] *Recycled water demand fields will be blank until Table 6-4 is complete*

[2] *Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier* ***may*** *deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.*

NOTES:

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss [1,2]
01/2016	483
01/2017	703
01/2018	587
01/2019	564
[1] *Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* [2] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES:	

Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	Chapter 9 Demand Management Measures
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES:	

Submittal Table 5-1 Baselines and Targets Summary
From SB X7-7 Verification Form
Retail Supplier or Regional Alliance Only

Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	*1995*	*2004*	*127*	*111*
5 Year	*2004*	*2008*	*117*	

**All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*

NOTES:

Submittal Table 5-2: 2020 Compliance From SB X7-7 2020 Compliance Form *Retail Supplier or Regional Alliance Only*				
2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* *(Adjusted if applicable)*		
100	*0*	*100*	*111*	*Y*
**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*				
NOTES:				

Submittal Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
☐	All or part of the groundwater described below is desalinated.					
Groundwater Type ***Drop Down List*** *May use each category multiple times*	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
Add additional rows as needed						
Alluvial Basin	Goleta Groundwater Basin	5473	2189	3066	2036	822
	TOTAL	5,473	2,189	3,066	2,036	822
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

Submittal Table 6-2 Retail: Wasewater Collected Within Service Area in 2020						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2015 service area covered by wastewater collection system *(optional)*					
	Percentage of 2015 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
Goleta Sanitary District	Metered	4,930	Goleta Sanitary District	Goleta Sanitary District Wastewater Treatment Plant	Yes	No
Goleta West Sanitary District	Metered	0	Goleta Sanitary District	Goleta Sanitary District Wastewater Treatment Plant	Yes	No
Total Wastewater Collected from Service Area in 2020:		4,930				

**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3* **.**

NOTES:

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020											
☐	**No wastewater is treated or disposed of within the UWMP service area.** The supplier will not complete the table below.										
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional) 2*	Method of Disposal *Drop down list*	Does This Plant Treat Wastewater Generated Outside the Service Area? *Drop down list*	Treatment Level *Drop down list*	2020 volumes [1]				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area [3]	Recycled Outside of Service Area	Instream Flow Permit Requirement
GSD WWTP	Pacific Ocean	5,800 feet		Ocean outfall	No	Secondary,	4,930	4,054	876	0	n/a
						Total	4,930	4,054	876	0	0

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.
[2] If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility

NOTES:

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area

☐ Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.

Name of Supplier Producing (Treating) the Recycled Water:	Goleta Sanitary District
Name of Supplier Operating the Recycled Water Distribution System:	Goleta Sanitary District
Supplemental Water Added in 2020 (volume) *Include units*	0
Source of 2020 Supplemental Water	

Beneficial Use Type *Insert additional rows if needed.*	**Potential** Beneficial Uses of Recycled Water (Describe)	Amount of **Potential** Uses of Recycled Water (Quantity) *Include volume units* [1]	General Description of 2020 Uses	Level of Treatment *Drop down list*	2020 [1]	2025 [1]	2030[1]	2035[1]	2040[1]	2045[1] (opt)
Agricultural irrigation										
Landscape irrigation (exc golf courses)					277	292	293	293	293	
Golf course irrigation					437	461	463	463	463	
Commercial use					15	15	16	16	16	
Industrial use										
Geothermal and other energy production										
Seawater intrusion barrier										
Recreational impoundment										
Wetlands or wildlife habitat										
Groundwater recharge (IPR)										
Reservoir water augmentation (IPR)										
Direct potable reuse										
Other (Description Required)										
				Total:	729	768	772	772	772	0
				2020 Internal Reuse	147					

[1] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual		
☐	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.	
Beneficial Use Type	**2015 Projection for 2020** [1]	**2020 Actual Use**[1]
Insert additional rows as needed.		
Agricultural irrigation		
Landscape irrigation (exc golf courses)	540	277
Golf course irrigation	630	437
Commercial use	15	15
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)		
Total	1,185	729

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.

NOTE:

Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
☐	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *
Add additional rows as needed			
Mandatory Use Ordinance	To require connection and use for certain customers	In place	N/A
Rate Structures	Discounted rates to encourage use	In place	N/A
Customer Conversions	Construct infrastructure to serve customers adjacent to existing system	In place	43*
		Total	0
Units of measure (AF, CCF, MG) *must remain consistent throughout the UWMP as reported in Table 2-3.*			
NOTES: * Based on projected recycled water projects through 2030			

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type *Drop Down List*	Expected Increase in Water Supply to Supplier* *This may be a range*
	Drop Down List (y/n)	*If Yes, Supplier Name*				
Add additional rows as needed						
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
Drop down list May use each category multiple times.These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Groundwater (not desalinated)	Goleta Groundwater Basin	822	Drinking Water	2,350
Recycled Water	Goleta WWTP	729	Recycled Water	4,930
Surface water (not desalinated)	Cachuma Project Water	9,389	Drinking Water	9,322
Purchased or Imported Water	State Water Project	606	Drinking Water	7,450
	Total	11,546		24,052
Units of measure (AF, CCF, MG) *must remain consistent throughout the UWMP as reported in Table 2-3.*				
NOTES:				

Submittal Table 6-9 Retail: Water Supplies — Projected											
Water Supply	Additional Detail on Water Supply	**Projected Water Supply *** Report To the Extent Practicable									
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		**2025**		**2030**		**2035**		**2040**		**2045** (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Add additional rows as needed											
Groundwater (not desalinated)		2,350		2,350		2,350		2,350			
Recycled Water		768		772		772		772			
Surface water (not desalinated)		9,322		9,322		9,322		9,322			
Purchased or Imported Water		3,800		3,800		3,800		3,800			
Total		16,240	0	16,244	0	16,244	0	16,244	0	0	0

***Units of measure (AF, CCF, MG)** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)				
Year Type	**Base Year** If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	**Available Supplies if Year Type Repeats**		
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location ______________________	
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available *		**% of Average Supply**
Average Year	N/A	16244		100%
Single-Dry Year	2012	15468		95%
Consecutive Dry Years 1st Year	2012	15468		95%
Consecutive Dry Years 2nd Year	2013	14968		92%
Consecutive Dry Years 3rd Year	2014	12559		77%
Consecutive Dry Years 4th Year	2015	12559		77%
Consecutive Dry Years 5th Year	2016	12559		77%

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

***Units of measure (AF, CCF, MG**) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 *(Opt)*
Supply totals (*autofill from Table 6-9)*	16,240	16,244	16,244	16,244	0
Demand totals *(autofill from Table 4-3)*	11,634	12,097	12,333	12,509	0
Difference	4,606	4,147	3,911	3,735	0
NOTES:					

Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	15,464	15,468	15,468	15,468	
Demand totals*	11,627	12118	12,370	12,559	
Difference	3,837	3,350	3,098	2,909	0

Units of measure (AF, CCF, MG) *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	15,464	15,468	15,468	15,468	
	Demand totals	11,627	12,118	12,370	12,559	
	Difference	3,837	3,350	3,098	2,909	0
Second year	Supply totals	14,964	14,968	14,968	14,968	
	Demand totals	11,627	12,118	12,370	12,559	
	Difference	3,337	2,850	2,598	2,409	0
Third year	Supply totals	11,626	12,118	12,370	12,559	
	Demand totals	11,627	12,118	12,370	12,559	
	Difference	(1)	0	0	0	0
Fourth year	Supply totals	11,626	12,118	12,370	12,559	
	Demand totals	11,627	12,118	12,370	12,559	
	Difference	(1)	0	0	0	0
Fifth year	Supply totals	11,626	12,118	12,370	12,559	
	Demand totals	11,627	12,118	12,370	12,559	
	Difference	(1)	0	0	0	0
Sixth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*						
NOTES:						

Note: Totals can be entered directly or from the Optional Planning T

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

2021	Total
Total Water Use	12,104
Total Supplies	16,329
Surplus/Shortfall w/o WSCP Action	4,225
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	4,225
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	12,106
Total Supplies	15,200
Surplus/Shortfall w/o WSCP Action	3,094
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	1,816
Revised Surplus/(shortfall)	4,910
Resulting % Use Reduction from WSCP action	15%

2023	Total
Total Water Use	12,115
Total Supplies	11,465
Surplus/Shortfall w/o WSCP Action	(650)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	3,029
Revised Surplus/(shortfall)	2,379
Resulting % Use Reduction from WSCP action	25%

2024	Total
Total Water Use	12,131
Total Supplies	11,644
Surplus/Shortfall w/o WSCP Action	(487)
Planned WSCP Actions (use reduction and supply augmentation)	

WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	3,033
Revised Surplus/(shortfall)	2,546
Resulting % Use Reduction from WSCP action	25%

2025	Total
Total Water Use	12,133
Total Supplies	11,564
Surplus/Shortfall w/o WSCP Action	(569)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	3,033
Revised Surplus/(shortfall)	2,464
Resulting % Use Reduction from WSCP action	25%

Submittal Table 8-1
Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Shortage Response Actions (*Narrative description)*
1	Up to 10%	Goleta WSCP Stage 1 (15%). Public information campaign, accelerated audit and incentive programs for agriculture, large customers, and irrigation accounts, complementary water audits, customer leak notifications, reduced flushing, and shutting off District fountains.
2	Up to 20%	Goleta WSCP Stage 1 (15%). Public information campaign, accelerated audit and incentive programs for agriculture, large customers, and irrigation accounts, complementary water audits, customer leak notifications, reduced flushing, and shutting off District fountains.
3	Up to 30%	Goleta WSCP Stage 2 (25%). Expand public information campaign, restrict irrigation days/times, no potable water for decorative fountains, large landscape water budgets, promote leak detection, prohibit refilling pools, conservation signage in hotels/motels/gyms.
4	Up to 40%	Goleta WSCP Stage 3 (35%). Expand public information, further restrict irrigation times, reduce landscape water budgets, implement drought rates, intensity leak detection and repair, increase water waste enforcement.
5	Up to 50%	Goleta WSCP Stage 4 (45%). Prohibit median strip irrigation with potable water, limit potable water use on golf courses, prohibit filling new pools/spas, limit landscape watering to 1 day/week hand watering, prohibit turf irrigation with potable water, increase staff.
6	>50%	Goleta WSCP Stage 5 (>50%). No water for irrigation or recreational purposes. Close public pools. Increase drought rates, penalties and enforcement. Implement emergency response plan as needed.

NOTES:

Submittal Table 8-2: Demand Reduction Actions				
Shortage Level	Demand Reduction Actions ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? ***For Retail Suppliers Only*** *Drop Down List*
Add additional rows as needed				
I	Expand Public Information Campaign	5%	Includes development of a Water Shortage Declaration media kit and conservation related billing statement messages	Yes
I	Offer Water Use Surveys	4%	Identifies largest water users in each sector and contacts for complementary water audits	Yes
I	Other	1%	Provides water conservation hotline to allow reporting of water waste	Yes
I	Provide Rebates on Plumbing Fixtures and Devices	2%	Accelerates audit and incentive programs for irrigation	Yes
I	Other	1%	Accelerates audit and incentive programs for agriculture and large customers	Yes
I	Other	2%	Identifies and notifies customers of possible leaks	Yes
I	Other	1%	Encourages use of drip irrigation and drought tolerant plants	Yes
I	Decrease Line Flushing	0.30%	Reduces water usage for main flushing, street flushing, and hydrant flushing	Yes
I	Reduce System Water Loss	0.30%	Intensifies maintenance efforts to identify and correct water leaks in the distribution system	Yes
II	Expand Public Information Campaign	0.00%	Includes targeted outreach to customers with large landscapes and customer education on how to perform regular household meter reading and leak detection	Yes
II	Pools and Spas - Require covers for pools and spas	1%	Encourages the use of pool covers when not in active use	Yes
II	Other	2%	Promotes meter reading and leak detection by all customers	Yes
II	CII - Lodging establishment must offer opt out of linen service	1%	Encourages posting of notice of shortage conditions and daily linen washing only if requested at hotels, motels, and other lodgings	Yes

II	Other	1%	Encourages shorter showers in gyms, athletic clubs, and public pools	Yes
II	Other - Prohibit use of potable water for washing hard surfaces	1%	No washing down of sidewalks, driveways, parking lots, or other hardscapes except to protect public health and safety	Yes
II	Water Features - Restrict water use for decorative water features, such as fountains	1%	Potable water not to be used to clean, fill, or maintain levels in decorative fountains, with certain exceptions	Yes
II	Landscape - Limit landscape irrigation to specific times	1%		Yes
II	Landscape - Limit landscape irrigation to specific days	2%	Restrict landscape watering to no more than two days per week	Yes
II	Landscape - Other landscape restriction or prohibition	1.30%	Encourage large landscapes to adhere to water budgets	Yes
II	Other water feature or swimming pool restriction	0.30%	Prohibit draining and refilling of swimming pools	Yes
III	Expand Public Information Campaign	0.00%	Includes publishing monthly demand charts in local newspaper or on the District website, and considering hiring a third party to assist with the launch of a major publicity campaign	Yes
III	Other	0.70%	Encourages all commercial customers to prominently post water shortage signage with specified language at specified locations	Yes
III	Increase Water Waste Patrols	1.60%	Increased field staff	Yes
III	Landscape - Limit landscape irrigation to specific times	1.70%	Further restrict designated times for irrigation.	Yes
IV	Landscape - Prohibit certain types of landscape irrigation	1.20%	Prohibit irrigation of roadway median strips with potable water. Limit use of potable water on golf courses.	Yes
IV	Landscape - Limit landscape irrigation to specific days	1.70%	Restrict landscape watering to no more than one day per week	Yes
IV	Landscape - Prohibit certain types of landscape irrigation	3.00%	Prohibit irrigation of turf/lawn with potable water. Prohibit use of sprinklers (hand watering only).	Yes
IV	Other water feature or swimming pool restriction	0.20%	Prohibit filling of new swimming pools, spas, and hot tubs.	Yes
IV	Other	0.10%	Prohibit on-site vehicle washing such as company fleets, dealer lots, etc.	Yes

IV	Expand Public Information Campaign	0.00%	Includes implementing major publicity campaign initiated during Stage III and provides regular media briefings and updates on supply situation	Yes
IV	Increase Water Waste Patrols	1.40%	Implements 24/7 enforcement of demand reduction programs, install flow restrictor, and/or facilitate shut offs	Yes
V	Landscape - Prohibit all landscape irrigation	8.60%	Prohibit all outdoor irrigation except recycled water or gray water/	Yes
V	Other	0.40%		Yes
V	Other	0.10%		Yes
V	Increase Water Waste Patrols	0.90%	Coordinate with law enforcement for demand reduction enforcement challenges.	Yes
NOTES:				

Submittal Table 8-3: Supply Augmentation and Other Actions			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*
Add additional rows as needed			
III	Other Actions (describe)	4%	Implement drought rates and increased penalty fees
IV	Other Actions (describe)	1%	Increase drought rates and penalty fees.
NOTES:			

Submittal Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
City of Goleta	Yes	Yes
City of Santa Barbara	Yes	Yes
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Santa Barbara County	Yes	Yes
NOTES:		

Urban Water Supplier: *enter supplier name*

Table O-1C: Recommended Energy Reporting - Multiple Water Delivery Products									
Enter Start Date for Reporting Period: 10/1/2019		Urban Water Supplier Operational Control							
End Date: 9/29/2020		Water Management Process						Non-Consequential Hydropower (if applicable)	
Is upstream embedded in the values reported? ☐									
		Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	Total Utility	Hydropower	Net Utility
Water Volume Units	*Total Volume of Water Entering Process (volume units)*	*822*	*0*	*9995*	*9995*	*11546*	*N/A*	*0*	*N/A*
dropdown menu	*Retail Potable Deliveries (%)*	*100%*	*0%*	*100%*	*100%*	*94%*		*0%*	
	Retail Non-Potable Deliveries (%)	*0%*	*0%*	*0%*	*0%*	*6%*		*0%*	
	Wholesale Potable Deliveries(%)	*0%*	*0%*	*0%*	*0%*	*0%*		*0%*	
	Wholesale Non-Potable Deliveries (%)	*0%*	*0%*	*0%*	*0%*	*0%*		*0%*	
	Agricultural Deliveries (%)	*0%*	*0%*	*0%*	*0%*	*0%*		*0%*	
	Environmental Deliveries (%)	*0%*	*0%*	*0%*	*0%*	*0%*		*0%*	
	Other (%)	*0%*	*0%*	*0%*	*0%*	*0%*		*0%*	
	Total Percentage [must equal 100%]	*100%*	*0%*	*100%*	*100%*	*100%*	*N/A*	*0%*	*N/A*
	Energy Consumed (kWh)	*1,905,111*	*0*	*1,750,537*	*711,321*	*1,230,623*	*5597592*	*0*	*5597592*
	Energy Intensity (kWh/volume units)	*2317.7*	*0.0*	*175.1*	*71.2*	*106.6*	*N/A*	*0.0*	*N/A*

Water Delivery Type	*Production Volume (volume units defined above)*	*Total Utility (kWh/volume)*	*Net Utility (kWh/volume)*
Retail Potable Deliveries	*10817*	*510.7*	*0.0*
Retail Non-Potable Deliveries	*729*	*101.3*	*0.0*
Wholesale Potable Deliveries	*0*	*0.0*	*0.0*
Wholesale Non-Potable Deliveries	*0*	*0.0*	*0.0*
Agricultural Deliveries	*0*	*0.0*	*0.0*
Environmental Deliveries	*0*	*0.0*	*0.0*
Other	*0*	*0.0*	*0.0*
All Water Delivery Types	*11546*	*484.8*	*0.0*

Quantity of Self-Generated Renewable Energy

kWh

Data Quality *(Estimate, Metered Data, Combination of Estimates and Metered Data)*

Metered Data

Data Quality Narrative:

The energy used to move SWP water from the Delta to the South Coast via pumping plants is estimated by DWR annually in Bulletin 132. The Cachuma Operation and Maintenance Board also estimates the energy required to convey Cachuma Project water from Lake Cachuma to member agencies. Metered data was provided for the remaining activities, which include: 1) treatment of SWP and Cachuma Project water at the CDM WTP, 2) extraction of groundwater from the Goleta Groundwater Basin, 3) distribution of water to all customers.

Narrative:

Energy is used to: 1) convey SWP water from the Delta to the Polonio Pass Pumping Plant, 2) treat SWP water that reaches Lake Cachuma and Cachuma Project water at the CDM WTP, 3) convey SWP water that reaches Lake Cachuma and Cachuma Project to member agencies, 4) extract water from groundwater basin, and 5) distribute all water supplies to customers.

APPENDIX B: SUBMITTALS AND NOTIFICATIONS

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4699 HOLLISTER AVENUE
GOLETA, CALIFORNIA 93110-1999
TELEPHONE 805/964-6761
FAX 805/964-7002

March 4, 2021

Peter Imhof
Planning & Environmental Review Director
City of Goleta
130 Cremona Drive, Suite B
Goleta, CA 93117

SENT VIA U.S. MAIL and email
pimhof@cityofgoleta.org

Dear Mr. Imhof,

Every five years the Goleta Water District (District) is required to develop a state-mandated Urban Water Management Plan (UWMP). State law provides a framework for how water suppliers such as the District are to carry out their long-term resource planning responsibilities through the UWMP.[1] Specifically, suppliers are to assess supplies and demand, consider and analyze actions to be taken during droughts, and commit to implementing demand management strategies to encourage efficient water use.

Since the City of Goleta is within the District's service area, this letter is to provide notification that an updated Urban Water Management Plan is under development. Pursuant to California Water Code Section 10621(b), this notification is being provided at least 60 days prior to the public District Board of Directors meeting at which the updated UWMP will be reviewed and considered for adoption. The District will issue a public notice when the date of the public workshop is known, likely in May or June. The Draft UWMP will be made available for review and public comment during the two weeks leading up to the public meeting.

If you have any questions, please contact me at rdrake@goletawater.com or 805-879-4627.

Sincerely,

Ryan Drake
Water Supply and Conservation Manager

[1] California Water Code Section 10610 et seq.

4699 HOLLISTER AVENUE
GOLETA, CALIFORNIA 93110-1999
TELEPHONE 805/964-6761
FAX 805/964-7002

March 4, 2021

Paul Casey
City Administrator
City of Santa Barbara
735 Anacapa Street
Santa Barbara, CA 93101

SENT VIA U.S. MAIL and email
pcasey@santabarbara.gov

Dear Mr. Casey,

Every five years the Goleta Water District (District) is required to develop a state-mandated Urban Water Management Plan (UWMP). State law provides a framework for how water suppliers such as the District are to carry out their long-term resource planning responsibilities through the UWMP.[1] Specifically, suppliers are to assess supplies and demand, consider and analyze actions to be taken during droughts, and commit to implementing demand management strategies to encourage efficient water use.

Since the City of Santa Barbara is within the District's service area, this letter is to provide notification that an updated Urban Water Management Plan is under development. Pursuant to California Water Code Section 10621(b), this notification is being provided at least 60 days prior to the public District Board of Directors meeting at which the updated UWMP will be reviewed and considered for adoption. The District will issue a public notice when the date of the public workshop is known, likely in May or June. The Draft UWMP will be made available for review and public comment during the two weeks leading up to the public meeting.

If you have any questions, please contact me at rdrake@goletawater.com or 805-879-4627.

Sincerely,

Ryan Drake
Water Supply and Conservation Manager

[1] California Water Code Section 10610 et seq.

4699 HOLLISTER AVENUE
GOLETA, CALIFORNIA 93110-1999
TELEPHONE 805/964-6761
FAX 805/964-7002

March 4, 2021

Ms. Lisa Plowman
Planning & Development Director
Santa Barbara County
123 E. Anapamu Street
Santa Barbara, CA 93101

SENT VIA EMAIL
LPlowman@co.santa-barbara.ca.us

Dear Ms. Plowman,

Every five years the Goleta Water District (District) is required to develop a state-mandated Urban Water Management Plan (UWMP). State law provides a framework for how water suppliers such as the District are to carry out their long-term resource planning responsibilities through the UWMP.[1] Specifically, suppliers are to assess supplies and demand, consider and analyze actions to be taken during droughts, and commit to implementing demand management strategies to encourage efficient water use.

Since Santa Barbara County is within the District's service area, this letter is to provide notification that an updated Urban Water Management Plan is under development. Pursuant to California Water Code Section 10621(b), this notification is being provided at least 60 days prior to the public District Board of Directors meeting at which the updated UWMP will be reviewed and considered for adoption. The District will issue a public notice when the date of the public workshop is known, likely in May or June. The Draft UWMP will be made available for review and public comment during the two weeks leading up to the public meeting.

If you have any questions, please contact me at rdrake@goletawater.com or 805-879-4627.

Sincerely,

Ryan Drake
Water Supply and Conservation Manager

---

[1] California Water Code Section 10610 et seq.

SANTA BARBARA NEWS PRESS
Proof of Publication
(2015.5C.C.P)

Superior Court of
the State of California
In and For The County of Santa Barbara

In the Matter of:

Legal 57079
Ad # 635590

Public Notice

The undersigned, being the principal clerk of the printer of the Santa Barbara News Press, a newspaper of general circulation, printed and published daily in the City of Santa Barbara, County of Santa Barbara, California and which newspaper has been adjudged a newspaper of general circulation by the Superior Court in the County of Santa Barbara, State of California, Adjudication Number 47171; and that affiant is the principal clerk of said Santa Barbara News Press. That the printed notice hereto annexed was published in the SANTA BARBARA NEWS-PRESS, in the issues of the following named dates:

April 26; May 3, 2021

I hereby certify (or declare) under penalty of perjury that the foregoing is true and correct.

Executed on this 3rd of May, 2021 at Santa Barbara, CA

P. Matsumaru

P. Matsumaru

GOLETA WATER DISTRICT
NOTICE OF PUBLIC HEARING
2020 URBAN WATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that at 5:30 pm on May 11, 2021 the Board of Directors of the Goleta Water District (GWD) will conduct a public hearing pursuant to California Water Code sections 10642 and 10608.26 to consider community comments and input on the Goleta Water District 2020 Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan (WSCP). Due to the current COVID emergency, the public hearing will be conducted via video conference. Information on how to participate in or observe the meeting will be detailed in the meeting Agenda, which will be published on May 6, 2021, and available online at http://www.goletawater.com/agendas-and-minutes.

The Draft UWMP and WSCP are currently available for public review online at www.goletawater.com. The draft UWMP has been developed in accordance with the California Urban Water Management Planning Act, Water Code sections 10610 through 10656, as well as the Water Conservation Act of 2009, Water Code sections 10608 through 10608.64. Public input from diverse social, cultural and economic elements of the population is encouraged and is an important part of the 2020 UWMP and WSCP update process.

Written comments may be submitted by 5 pm Tuesday, May 11, 2021 to the attention of Ryan Drake, Water Supply & Conservation Manager at 4699 Hollister Ave, Goleta, CA 93110 or to rdrake@goletawater.com. Verbal comments can also be made at the hearing noted above. Upon conclusion of the hearing, the Board of Directors may revise, change, modify, and/or recommend adoption of the 2020 Urban Water Management Plan and Water Shortage Contingency Plan. The Plans will be considered for adoption at the June 8, 2021 public meeting.

In compliance with the Americans with Disabilities Act, if you are disabled and need accommodation to participate in the Zoom hearing, please contact Mary Capps, at 805-879-4621 for assistance at least 3 working days before the hearing.

PUBLISH ON April 26 and May 3, 2021

APR 26; MAY 3 / 2021 -- 57079

GOLETA WATER DISTRICT
NOTICE OF PUBLIC HEARING
2020 URBAN WATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that at 5:30 pm on May 11, 2021 the Board of Directors of the Goleta Water District (GWD) will conduct a public hearing pursuant to California Water Code sections 10642 and 10608.26 to consider community comments and input on the Goleta Water District 2020 Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan (WSCP). Due to the current COVID emergency, the public hearing will be conducted via video conference. Information on how to participate in or observe the meeting will be detailed in the meeting Agenda, which will be published on May 6, 2021, and available online at http://www.goletawater.com/agendas-and-minutes.

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In compliance with the Americans with Disabilities Act, if you are disabled and need accommodation to participate in the Zoom hearing, please contact Mary Capps, at 805-879-4621 for assistance at least 3 working days before the hearing.

PUBLISHED ON April 26 and May 3, 2021

BOARD OF DIRECTORS

Goleta Water District

DIRECTORS

Kathleen Werner, President
Farfalla Borah, Vice President
Tom Evans
Lauren Hanson
Bill Rosen

MEETING
AGENDA
Tuesday, May 11, 2021

5:30 p.m.

BY TELECONFERENCE

DURING THE CURRENT PUBLIC HEALTH EMERGENCY

THE DISTRICT MEETING ROOM WILL NOT BE OPEN TO THE PUBLIC

SEE BELOW FOR FURTHER INFORMATION ON HOW TO PARTICIPATE

AND PROVIDE PUBLIC COMMENT

As authorized by California Governor Gavin Newsom's Executive Order N-29-20, because of the current emergency health situation, the District Board Room will not be open to the public and some or all of the District Board of Directors will be participating in the meeting via teleconference.

HOW TO OBSERVE THE MEETING

Members of the public may observe the meeting as set forth below.

By Video:
Meetings may be viewed via Zoom Webinar. More information for joining a meeting using Zoom is found here: https://support.zoom.us/hc/en-us/articles/201362193-Joining-a-Meeting

Register to join the meeting electronically at: https://zoom.us/webinar/register/WN_V8qr24RFQ_C0dXnIPLqabA

By Telephone:
Meetings may be heard via telephone by calling **(888) 788 0099 (Toll Free)** and entering the **Webinar ID: 994 2793 2919**.

HOW TO SUBMIT PUBLIC COMMENTS

Members of the public may provide comments as set forth below:

In Advance of the Meeting:
Written comments may be provided via email to publiccomment@goletawater.com with "Public Comment" in the subject line. Comments that concern matters that are within the subject matter of the District but do not concern an item on the agenda should include at the beginning of the body of the email the words "General Public Comment" followed by the comments. All other comments should indicate the agenda item number and title in the beginning of the body of the email, followed by the respective comments.

All comments received before 5:30 p.m. the day prior to the meeting will be included as an agenda supplement on the District's website under the relevant meeting date and provided to the Directors at or prior to the meeting. Comments received within 24 hours of the commencement of the meeting will be read aloud, providing that the reading does not exceed three minutes or such time as the Board President allows. Comments that take longer than three minutes to read aloud may be cut off after three minutes.

Please note that written comments will not be redacted, and email addresses, physical addresses and telephone numbers will appear in the District's administrative record, including on-line, as submitted.

Concurrent Comments:
During the meeting, the Board President or designee will announce the opportunity to provide public comments for each agenda item. Once all comments are received on the respective agenda item, the corresponding comment period will be closed.

Please be mindful that virtual meetings are public and will be recorded. All meeting rules of procedure and decorum, including speaker time limits, will apply to those providing comments during virtual meetings. The Board President or designee may remove participants for persistent disruption or any conduct or statements that threaten the safety of any person(s) at the meeting.

Comments may be provided as follows:

By Video:

Those observing the meeting by video on the Zoom Webinar platform may make comments during designated public comment periods using the "raise hand" feature. Each person indicating such an interest will be called upon and provided with up to 3 minutes to make comments. Commenters will be required to unmute their respective microphone when providing comments and will be shown on the screen if their video function is turned on.

By Telephone:

Those observing the meeting by telephone may make comments during the designated public comment periods by pressing *9 on the key pad to indicate such interest. Each person indicating such an interest will be called upon and provided with up to 3 minutes to make comments. Commenters will be prompted to press *6 to unmute their respective telephone when called upon to speak.

ACCESSIBLITY INFORMATION

Any member of the public who requires special assistance because of a disability or other access issue should call (805) 964-6761 at least one day in advance of the meeting. The District will make every effort to accommodate requests for accommodations. All requests for accommodations will be responded to within one business day of the request.

MEETING PROCEDURES

The Board of Directors is the legislative body for the Goleta Water District. Persons are encouraged to participate and provide comments as set forth above. All times shown below are estimates for planning purposes; items may be heard earlier or later than estimated.

Mailed correspondence to the Board of Directors and its committees regarding items appearing on the agenda should be directed to the Secretary of the Board, 4699 Hollister Ave., Goleta, CA 93110. For information regarding the meetings of the Board of Directors including specific meeting times contact the Assistant Secretary of the Board at (805) 879-4621 or info@goletawater.com.

Board of Directors meeting agendas, supplemental Hearing materials and meeting minutes are available on the Internet at www.goletawater.com.

LATE DISTRIBUTION

Any disclosable public records related to an item on a regular meeting agenda and distributed by the Secretary of the Board to all or a majority of the members of the Board of Directors or a committee less than 72 hours prior to that meeting will be posted online.

TRANSLATION SERVICES

Upon request, the Board of Directors will make a reasonable effort to provide translation services. Please contact the Assistant Secretary to the Board at (805) 879-4621.

CLOSED SESSION

The Board of Directors and its committees may conduct a Closed Session on particular agendas as necessary. Closed Sessions are not open to the public. Matters discussed during Closed Session include existing and pending litigation, personnel matters and real property negotiations. Reportable Actions taken by the Board of Directors and its committees during Closed Session will be announced during open session (Gov. Code Sections 54947.1(a)&(b), Ralph M. Brown Act).

5:30 p.m. Convene

Roll Call

Public Comment Period

The public comment period is reserved for comment on the matter within the subject matter jurisdiction of the Board of Directors. Each person may address the Board by submitting a comment as set forth above.

Departmental Agenda

1) WATER SHORTAGE CONTINGENCY PLAN AMENDMENTS

WATER SUPPLY & CONSERVATION

1. Hold a public hearing to consider the Goleta Water District (District) amended Drought Preparedness and Water Shortage Contingency Plan (WSCP); and
2. Direct staff to finalize and present the WSCP for adoption at the June 8, 2021 Board of Directors meeting. (EST. TIME: 5 MIN.)

Legislative History

04/15/21 WMLRP Committee	Considered and Recommended Board Adoption
03/18/21 WMLRP Committee	Received Update

2) 2020 URBAN WATER MANAGEMENT PLAN UPDATE

WATER SUPPLY & CONSERVATION

1. Hold a public hearing to consider the Goleta Water District 2020 Urban Water Management Plan Update (UWMP) (Attachment 1); and
2. Direct staff to finalize and present the UWMP for adoption at the June 8, 2021 Board of Directors meeting. (EST. TIME: 40 MIN.)

Legislative History

04/15/21 WMLRP Committee	Considered and Recommended Board Adoption
03/18/21 WMLRP Committee	Received Update

3) 2020 CONSUMER CONFIDENCE REPORT

OFFICE OF THE GENERAL MANAGER

Approve the 2020 Consumer Confidence Report and authorize its circulation to customers. (EST. TIME: 10 MIN.)

Legislative History

04/20/21 Public Information Committee	Considered and Recommended Board Approval

4) DIRECTOR COMPENSATION

ADMINISTRATION

Receive a report regarding Board of Director compensation, and provide direction to staff as appropriate. (EST. TIME: 10 MIN.)

Legislative History

04/28/21 Administration Committee	Considered and Forwarded for Board Consideration
04/13/21 Board of Directors	Considered and Took No Action
03/31/21 Administration Committee	Considered and Forwarded for Board Consideration

5) COMB REPORT

DIRECTOR HANSON

Receive a report from Director Hanson on the activities of Cachuma Operation & Maintenance Board (COMB). (EST. TIME: 5 MIN.)

6) CCRB REPORT

DIRECTOR HANSON

Receive a report from Director Hanson on the activities of the Cachuma Conservation Release Board (CCRB). (EST. TIME: 5 MIN.)

7) CCWA REPORT

VICE PRESIDENT BORAH

Receive a report from Vice President Borah on the activities of the Central Coast Water Authority (CCWA). (EST. TIME: 5 MIN.)

8) ACWA REPORT

DIRECTOR ROSEN

Receive a report from Director Rosen on the activities of the Association of California Water Agencies (ACWA). (EST. TIME: 5 MIN.)

9) GOLETA SANITARY DISTRICT REPORT

DIRECTOR EVANS

Receive a report from Director Evans on the activities of the Goleta Sanitary District. (EST. TIME: 5 MIN.)

10) SANTA BARBARA COUNTY SPECIAL DISTRICTS ASSOCIATION REPORT

DIRECTOR EVANS

Receive a report from Director Evans on the activities of the Santa Barbara County Chapter of the California Special Districts Association. (EST. TIME: 5 MIN.)

11) FUTURE MEETING AGENDA ITEMS

PRESIDENT WERNER

Receive suggestions for future Board of Director meeting agendas. (EST. TIME: 5 MIN.)

Consent Agenda

All matters listed hereunder constitute a consent agenda, and may be acted upon by a single roll call vote of the Board.

CA-1) MEETING MINUTES

BOARD SECRETARY

Approval of minutes of the Board of Directors' April 13, 2021 meeting.

CA-2) CONSENT TO GENERAL COUNSEL'S SIMULTANEOUS REPRESENTATION OF GOLETA WATER DISTRICT AND CARPINTERIA GROUNDWATER SUSTAINABILITY AGENCY

GENERAL COUNSEL

Consent to Colantuono, Highsmith & Whatley's ("CHW") simultaneous representation of the District as general counsel and Carpinteria Groundwater Sustainability Agency.

CA-3) CAL OES COMMUNITY POWER RESILIENCY GRANT AWARD

OFFICE OF THE GENERAL MANAGER

Receive and file an update on the District's recent award of a California Governor's Office of Emergency Services (Cal OES) Community Power Resiliency Grant in the amount of $105,000.

CA-4) UNAUDITED INTERIM FINANCIAL REPORT – MARCH 31, 2021

ADMINISTRATION

Receive and file the Goleta Water District Interim Financial Report through March 31, 2021.

CA-5) CASH DISBURSEMENT REPORT – MARCH 31, 2021

ADMINISTRATION

Receive and file the Goleta Water District Cash Disbursement Report through March 31, 2021.

CA-6) CONTRACTS EXECUTED BY THE GENERAL MANAGER – QUARTER ENDED MARCH 31, 2021

ADMINISTRATION

Receive and file a report on contracts executed by the General Manager from January 1, 2021 through March 31, 2021.

CA-7) PAST DUE ACCOUNTS RECEIVABLE REPORT – MARCH 31, 2021

ADMINISTRATION

Receive and file a report on Goleta Water District Past Due Accounts Receivable balances as of March 31, 2021.

CA-8) INVESTMENT REPORT – MARCH 31, 2021

ADMINISTRATION

Receive and file the Goleta Water District Investment Report as of March 31, 2021.

CA-9) ADMINISTRATION COMMITTEE REPORT

DIRECTOR ROSEN

Receive a report from Director Rosen on the activities of the Administration Committee for the month of April 2021.

CA-10) WATER MANAGEMENT AND LONG RANGE PLANNING COMMITTEE REPORT

DIRECTOR HANSON

Receive a report from Director Hanson on the activities of the Water Management and Long Range Planning Committee for the month of April 2021.

CA-11) PUBLIC INFORMATION COMMITTEE REPORT

PRESIDENT WERNER

Receive a report from President Werner on the activities of the Public Information Committee for the month of April 2021.

Approval of Consent Agenda

Closed Session Public Comment Period

The Closed Session public comment period is reserved for comment on the matters listed on the Closed Session agenda. Each person may address the Board by submitting a comment as set forth above.

Recess to Closed Session

Closed Session Agenda

CS-1) Conference with Legal Counsel; Initiation of Litigation
(Gov. Code § 54956.9(d)(4))

Number of Potential Cases: One

Based on existing facts and circumstances, the District Board of Directors has decided or is deciding whether to initiate litigation.

Re-Convene to Regular Session

Adjourn to May 12, 2021

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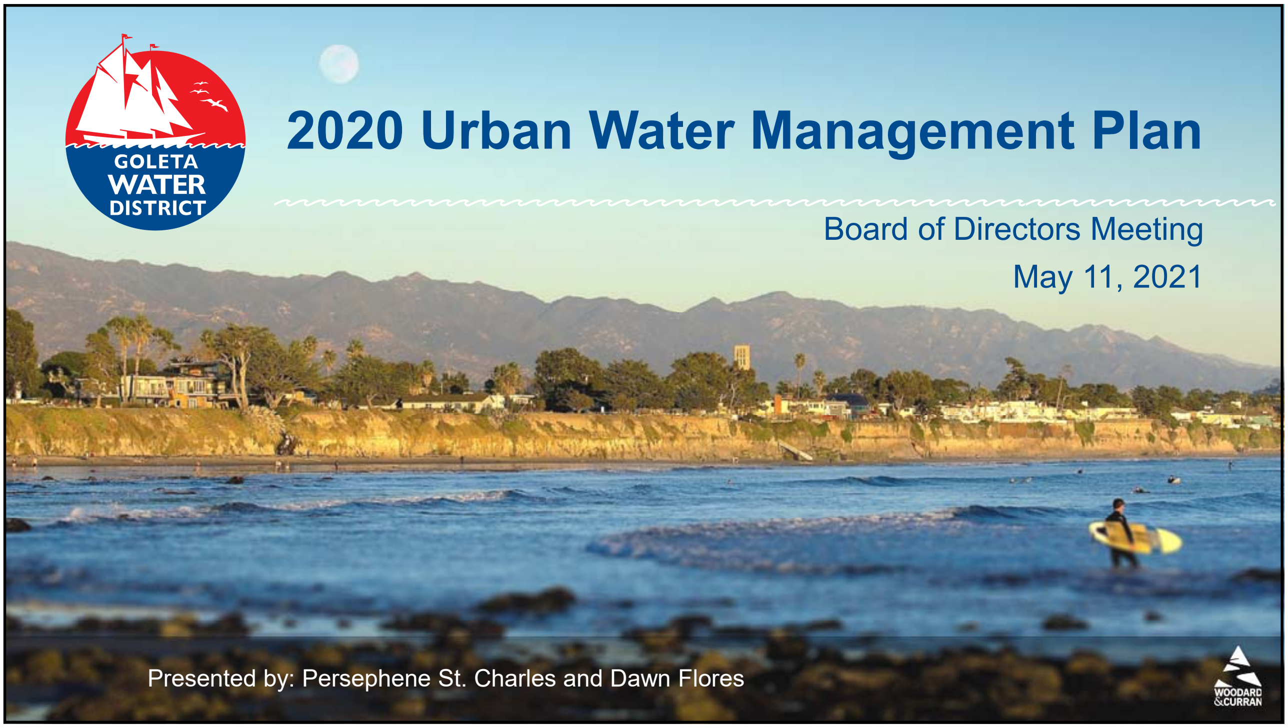


Presentation Outline

- What is an UWMP?
- Requirements of the 2020 UWMP
- GPCD Calculation and Compliance
- Demand Projections
- Supply Projections and Reliability Analysis
- Schedule

What is an UWMP?

- Required by DWR for urban water suppliers following strict guidelines
- Must be completed every 5 years
- Helps to understand future water reliability
- Requires establishing and tracking per capita water reduction targets
- Requirement for State funding

Requirements of the 2020 UWMP

2015 UWMP Requirements

- Population and demand analysis
- Supply source description
- Supply projection and reliability analysis
- Water quality concerns
- Gallon per capita per day (GPCD) targets and compliance
- Demand Management Measures description
- Water shortage contingency planning

New 2020 UWMP Requirements

- Climate change analysis
- Energy intensity of supplies analysis
- Five consecutive dry-year water reliability assessment
- Drought and Seismic Risk Assessment(s)
- Prescriptive Water Shortage Contingency Plan element updates
- Incorporation of land use changes in demand forecasts
- SGMA compliance description
- Lay description of UWMP

GPCD Calculations and Compliance

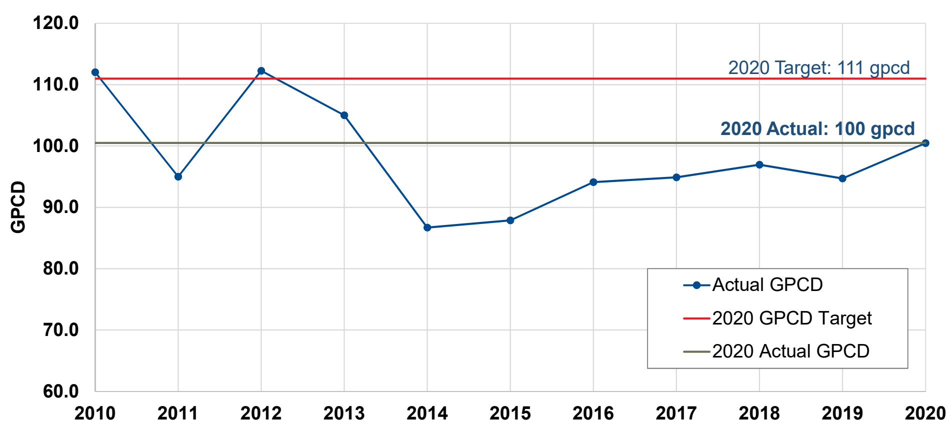
- SB X7-7 requires reductions in urban per capita water use
- GPCD baseline and targets for potable water use
  - Excludes agricultural irrigation demand and recycled water use
- District’s baseline and targets
  - Baseline (1995 to 2004): 127 gpcd
  - 2020 target: 111 gpcd
  - **2020 Actual: 100 gpcd**

Congratulations!

GOLETA WATER DISTRICT

WOODARD & CURRAN

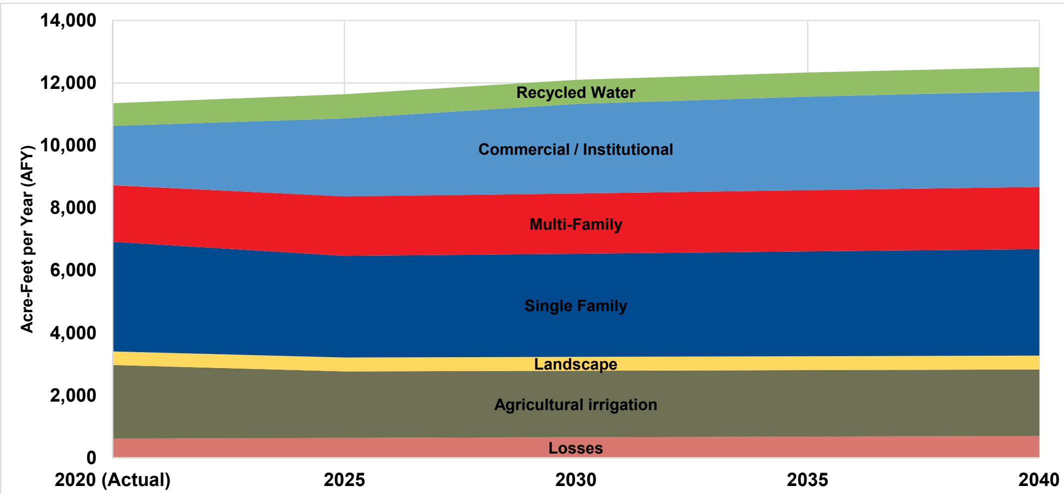
GPCD Calculations and Compliance



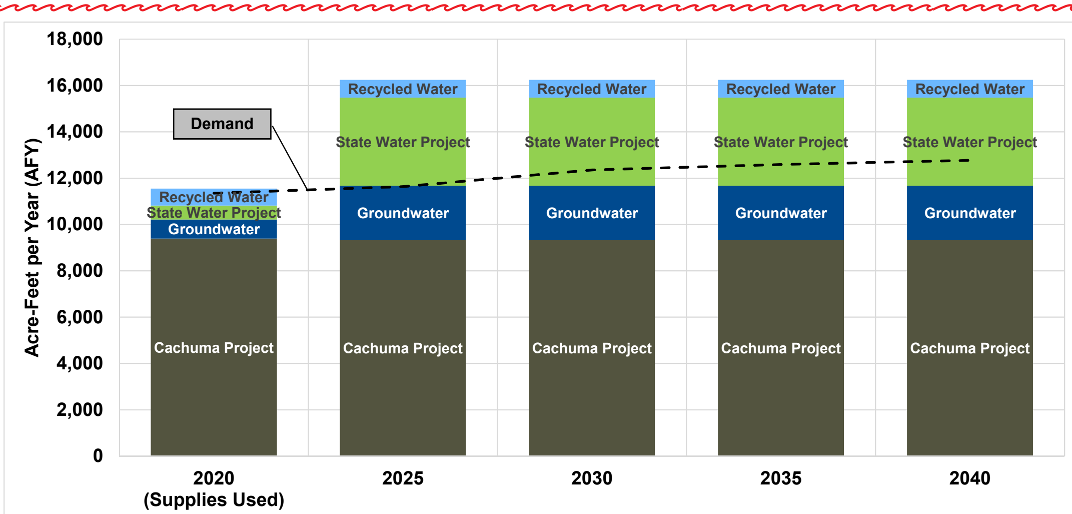
GOLETA WATER DISTRICT

WOODARD & CURRAN

Demand Projections

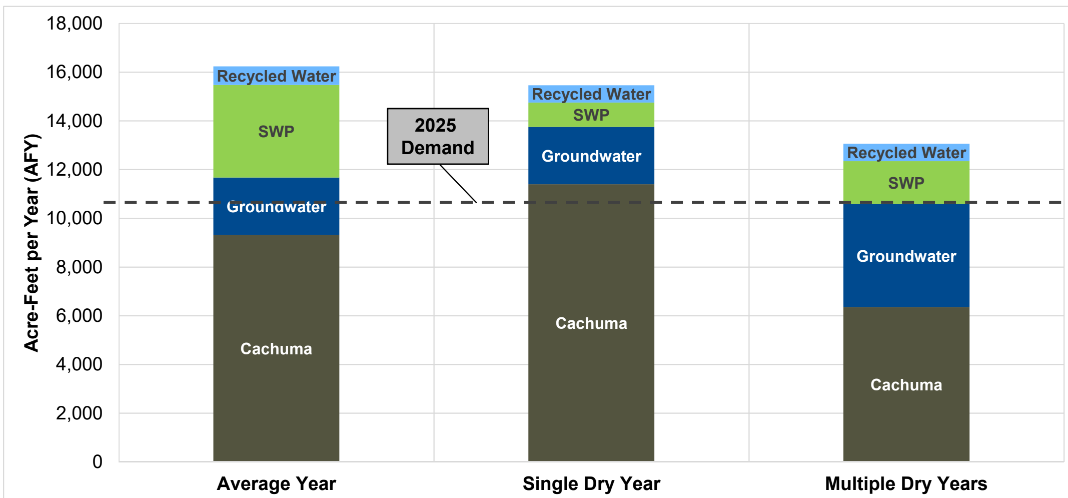


2020 Supplies Used & Future Projected Supplies Available (average year)

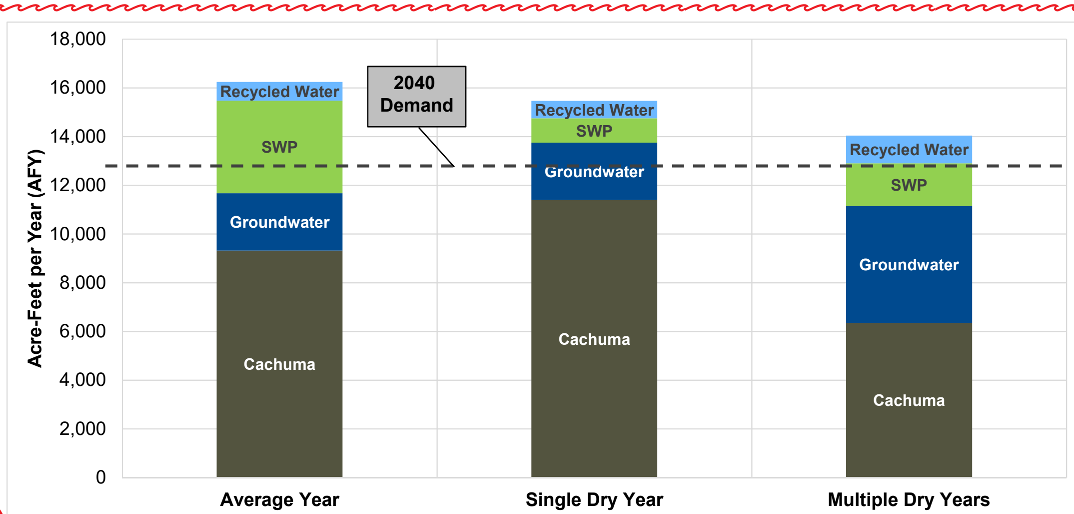


Projections every five years

2025 Available Supply Projections
(average, single dry and multiple dry years)

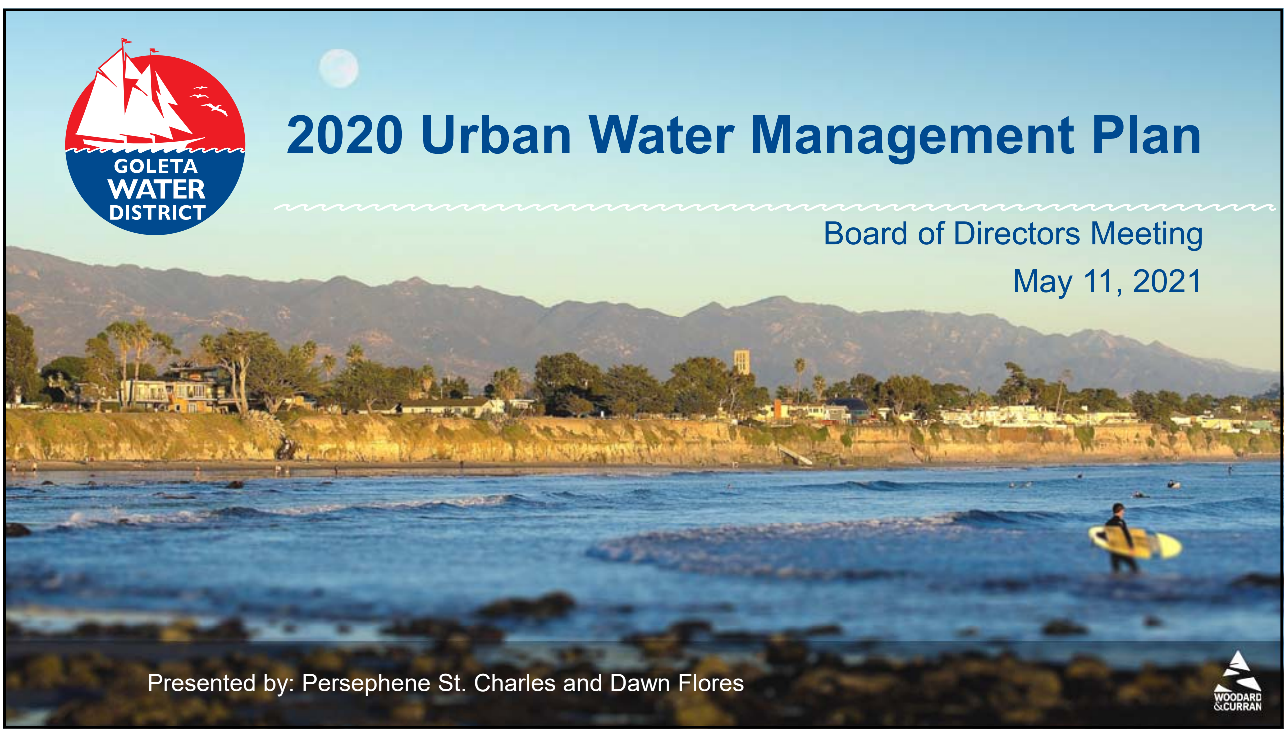


2040 Available Supply Projections
(average, single dry and multiple dry years)



Schedule

Deadline	Date(s)
Local Agency Outreach - 60-Day notification	March 5
Public Draft made available	April 27
Board Meeting to review UWMP / Public Hearing	May 11
Board Meeting to adopt UWMP and WSCP	June 8
Final UWMP / Submittal to DWR	By July 1



APPENDIX C: SBX7-7 VERIFICATION AND COMPLIANCE FORM

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SB X7-7 2020 Compliance Form

The SB X7-7 2020 Compliance Form **is for the calculation of 2020 compliance only. All retail suppliers must complete the SB X7-7 Compliance Form.** Baseline and target calculations are done in the SB X 7-7 Verification Form.

The SB X7-7 Verification Form is for the calculation of baselines and targets and is a separate workbook from the SB X7-7 2020 Compliance Form. Most Suppliers will have completed the SB X7-7 Verification Form with their 2015 UWMP and do not need to complete this form again in 2020. See Chapter 5 Section 5.3 of the UWMP Guidebook for more information regarding which Suppliers must, or may, complete the SB X7-7 Verification Form for their 2020 UWMP. 2020 compliance calculations are done in the SB X7-7 2020 Compliance Form.

WUE Data Portal Entry Exceptions

The data from the tables below will not be entered into WUE Data Portal tables. These tables will be submitted as separate uploads, in Excel, to WUE Data Portal.

Process Water Deduction

SB X7-7 tables 4-C, 4-C.1, 4-C.2, 4-C.3, 4-C.4 and 4-D

A supplier that will use the process water deduction will complete the appropriate tables in Excel, submit them as a separate upload to the WUE Data Portal, and include them in its UWMP.

SB X7-7 Table 0: Units of Measure Used in 2020 UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*
NOTES:

SB X7-7 Table 1 pertains to baselines and targets and is not used in the SB X7-7 2020 Compliance Form.

SB X7-7 Table 2: Method for 2020 Population Estimate	
Method Used to Determine 2020 Population (may check more than one)	
☐	**1. Department of Finance** (DOF) or **American Community Survey** (ACS)
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☑	**4. Other** DWR recommends pre-review
NOTES: DWR has approved the method described in Chapter 3 of the 2020 Urban Water Management Plan. Please refer to Appendix D.	

SB X7-7 Table 3: 2020 Service Area Population	
2020 Compliance Year Population	
2020	84,462
NOTES:	

SB X7-7 Table 4: 2020 Gross Water Use

Compliance Year 2020	2020 Volume Into Distribution System *This column will remain blank until SB X7-7 Table 4-A is completed.*	2020 Deductions					2020 Gross Water Use
		Exported Water *	Change in Dist. System Storage* (+/-)	Indirect Recycled Water *This column will remain blank until SB X7-7 Table 4-B is completed.*	Water Delivered for Agricultural Use*	Process Water *This column will remain blank until SB X7-7 Table 4-D is completed.*	
	10,817	-	-	-	1,310	-	**9,507**

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Groundwater		
This water source is *(check one)* **:**			
☑	The supplier's own water source		
☐	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional* *(+/-)*	Corrected Volume Entering Distribution System
	822	-	822

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s) Meter Error Adjustment

Complete one table for each source.

Name of Source	State Water Project		
This water source is *(check one)* **:**			
☐	The supplier's own water source		
☑	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional* *(+/-)*	Corrected Volume Entering Distribution System
	606		606

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Cachuma Water Project
This water source is *(check one)* **:**	

☑	The supplier's own water source
☐	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional* *(+/-)*	Corrected Volume Entering Distribution System
	9,389		9,389

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Enter Name of Source 4
This water source is *(check one)* **:**	
☐	The supplier's own water source
☐	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional* *(+/-)*	Corrected Volume Entering Distribution System
			0

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Enter Name of Source 5
This water source is *(check one)* **:**	
☐	The supplier's own water source
☐	A purchased or imported source

SB X7-7 Table 4-B: 2020 Indirect Recycled Water Use Deduction *(For use only by agencies that are d*						
2020 Compliance Year	**2020 Surface Reservoir Augmentation**					**202**
	Volume Discharged from Reservoir for Distribution System Delivery[1]	Percent Recycled Water	Recycled Water Delivered to Treatment Plant	Transmission/ Treatment Loss[1]	Recycled Volume Entering Distribution System from Surface Reservoir Augmentation	Recycled Water Pumped by Utility[1,2]
	-	0%	-	-	-	-

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 T*
Suppliers will provide supplemental sheets to document the calculation for their input into "Recycled Water Pu
less than total groundwater pumped - See Methodology 1, Step 8, section 2.c.

(deducting indirect recycled water)		
0 Groundwater Recharge		
Transmission/ Treatment Losses[1]	Recycled Volume Entering Distribution System from Groundwater Recharge	**Total Deductible Volume of Indirect Recycled Water Entering the Distribution System**
-	-	-

Table 0 and Submittal Table 2-3. [2]
mped by Utility". The volume reported in this cell must be

Data from this table will not be entered into WUEdata.
Instead, the entire table will be uploaded to WUEdata as a separate upload in Excel format.

SB X7-7 Table 4-C: 2020 Process Water Deduction Eligibility (For use only by agencies that are deducting process water) Choose Only One	
☐	**Criteria 1**- Industrial water use is equal to or greater than 12% of gross water use. Complete SB X7-7 Table 4-C.1
☐	**Criteria 2** - Industrial water use is equal to or greater than 15 GPCD. Complete SB X7-7 Table 4-C.2
☐	**Criteria 3** - Non-industrial use is equal to or less than 120 GPCD. Complete SB X7-7 Table 4-C.3
☐	**Criteria 4** - Disadvantaged Community. Complete SB x7-7 Table 4-C.4
NOTES:	

Data from this table will not be entered into WUEdata.
Instead, the entire table will be uploaded to WUEdata as a separate upload in Excel format.

SB X7-7 Table 4-C.1: 2020 Process Water Deduction Eligibility *(For use only by agencies that are deducting process water using Criteria 1)*

Criteria 1

Industrial water use is equal to or greater than 12% of gross water use

2020 Compliance Year	2020 Gross Water Use Without Process Water Deduction	2020 Industrial Water Use	Percent Industrial Water	**Eligible for Exclusion Y/N**
	9,507	-	0%	NO

NOTES:

Data from this table will not be entered into WUEdata.
Instead, the entire table will be uploaded to WUEdata as a separate upload in Excel format.

SB X7-7 Table 4-C.2: 2020 Process Water Deduction Eligibility *(For use only by agencies that are deducting process water using Criteria 2)*

Criteria 2
Industrial water use is equal to or greater than 15 GPCD

2020 Compliance Year	2020 Industrial Water Use	2020 Population	2020 Industrial GPCD	**Eligible for Exclusion Y/N**
	-	84,462	-	NO

NOTES:

Data from this table will not be entered into WUEdata. Instead, the entire table will be uploaded to WUEdata as a separate upload in Excel format.

SB X7-7 Table 4-C.3: 2020 Process Water Deduction Eligibility *(For use only by agencies that are deducting process water using Criteria 3)*

Criteria 3
Non-industrial use is equal to or less than 120 GPCD

2020 Compliance Year	2020 Gross Water Use Without Process Water Deduction *Fm SB X7-7 Table 4*	2020 Industrial Water Use	2020 Non-industrial Water Use	2020 Population *Fm SB X7-7 Table 3*	Non-Industrial GPCD	**Eligible for Exclusion Y/N**
	9,507	-	9,507	84,462	100	YES

NOTES:

Data from this table will not be entered into WUEdata.
Instead, the entire table will be uploaded to WUEdata as a separate upload in Excel format.

SB X7-7 Table 4-C.4: 2020 Process Water Deduction Eligibility *(For use only by agencies that are deducting process water using Criteria 4)*

Criteria 4

Disadvantaged Community. A "Disadvantaged Community" (DAC) is a community with a median household income less than 80 percent of the statewide average.

SELECT ONE

"Disadvantaged Community" status was determined using one of the methods listed below:

1. IRWM DAC Mapping tool https://gis.water.ca.gov/app/dacs/

☐ If using the IRWM DAC Mapping Tool, include a screen shot from the tool showing that the service area is considered a DAC.

2. 2020 Median Income

☐

California Median Household Income*		Service Area Median Household Income	Percentage of Statewide Average	**Eligible for Exclusion? Y/N**
2020	**$75,235**		0%	YES

*California median household income 2015 -2019 as reported in US Census Bureau QuickFacts.

NOTES

Data from these tables will not be entered into WUEdata. Instead, the entire tables will be uploaded to WUEdata as a separate upload in Excel format.

This table(s) is only for Suppliers that deduct process water from their 2020 gross water use.

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer	*Enter Name of Industrial Customer 1*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
					-

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer	*Enter Name of Industrial Customer 2*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
					-

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer	*Enter Name of Industrial Customer 3*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
					-

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer	*Enter Name of Industrial Customer 4*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
					-

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer	*Enter Name of Industrial Customer 5*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
					-

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer	*Enter Name of Industrial Customer 6*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
					-

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer	*Enter Name of Industrial Customer 7*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
					-

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer	*Enter Name of Industrial Customer 8*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
					-

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer	*Enter Name of Industrial Customer 9*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
					-

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer	*Enter Name of Industrial Customer 10*				
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer
					-

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)		
2020 Gross Water ***Fm SB X7-7 Table 4***	**2020 Population** ***Fm SB X7-7 Table 3***	**2020 GPCD**
9,507	84,462	**100**
NOTES:		

SB X 7-7 Table 6 pertains to baselines and targets and is not used in the SB X7-7 2020 Compliance Form.

SB X7-7 Table 7 applies to baseline and target calculations and is not included in the SB X7-7 2020 Compliance Form.

SB X7-7 Table 8 was used for the 2015 Interim Target and is not used in the 2020 UWMP.

SB X7-7 Table 9: 2020 Compliance							
Actual 2020 GPCD[1]	Optional Adjustments to 2020 GPCD					2020 Confirmed Target GPCD [1, 2]	Did Supplier Achieve Targeted Reduction for 2020?
	Enter "0" if Adjustment Not Used			TOTAL Adjustments[1]	Adjusted 2020 GPCD [1] *(Adjusted if applicable)*		
	Extraordinary Events[1]	Weather Normalization[1]	Economic Adjustment[1]				
100	-	-	-	-	100	111	**YES**

[1] *All values are reported in GPCD*

[2] ***2020 Confirmed Target GPCD*** *is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.*

NOTES:

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APPENDIX D: NOTICE FROM DWR APPROVING ALTERNATIVE POPULATION CALCULATION

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Dawn Flores

From: Huff, Gwen@DWR <Gwen.Huff@water.ca.gov>
Sent: Thursday, February 25, 2021 1:05 PM
To: Dawn Flores
Cc: DWR UWMP Help; Ekstrom, Julia@DWR; Vail, Betsy@DWR
Subject: Re: Alternative Population Analysis Goleta Water District

Follow Up Flag: Follow up
Flag Status: Completed

Dawn -

Yes, the population methodology approved for the 2015 UWMP is appropriate for use in the 2020 UWMP.

Gwen

Gwen Huff
Retired Annuitant, Senior Environmental Scientist
Department of Water Resources
gwen.huff@water.ca.gov

From: DWR UWMP Help <UWMPHelp@water.ca.gov>
Sent: Wednesday, February 24, 2021 2:55 PM
To: Huff, Gwen@DWR <Gwen.Huff@water.ca.gov>
Cc: Ekstrom, Julia@DWR <Julia.Ekstrom@water.ca.gov>; DWR UWMP Help <UWMPHelp@water.ca.gov>
Subject: FW: Alternative Population Analysis Goleta Water District

Hi Gwen,

Goleta Water District is requesting pre-approval to use an alternative population method. They used it in 2015, and they'd like to use it again in 2020. Could you please review, respond, and cc me?

Thank you!

Betsy Vail
Environmental Scientist
Water Use & Efficiency Branch
California Department of Water Resources
(916) 651-9667

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From: Campagna, James@DWR <James.Campagna@water.ca.gov>
Sent: Tuesday, February 23, 2021 8:41 AM
To: DWR UWMP Help <UWMPHelp@water.ca.gov>
Subject: FW: Alternative Population Analysis Goleta Water District

We received this in our Branch inbox.

From: Dawn Flores <dflores@woodardcurran.com>
Sent: Monday, February 22, 2021 4:52 PM
To: DWR Water Use Efficiency <wue@water.ca.gov>
Subject: Alternative Population Analysis Goleta Water District

Hello,

I'm supporting the Goleta Water District in developing their 2020 Urban Water Management Plan. As part of their 2015 UWMP, the District obtained approval from DWR to use their own methodology for estimating population within the service area. We'd like to use the same method for the 2020 UWMP and therefore would like to again obtain DWR approval for this method prior to submittal of the plan. Please see attached for an email that includes the population projection methodology and approval from Gwen Huff. If you have any questions, please feel free to contact me.

Thank you,
Dawn

Dawn Flores
Water Resources Planner
Woodard & Curran
888 South Figueroa Street, Suite 1700 | Los Angeles, CA 90017
213.223.9460 | Direct: 213.223.9471 | www.woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

Lila Spring

From:	Huff, Gwen@DWR <Gwen.Huff@water.ca.gov>
Sent:	Tuesday, February 16, 2016 10:43 AM
To:	Lila Spring
Subject:	RE: Alternative Population Analysis Goleta

Lila –

I find that the population methodology used for Goleta Water District (described below) is appropriate and addresses the requirements of the Water Code.

Gwen

Gwen Huff
Senior Environmental Scientist
Urban Water Use Efficiency Unit
Department of Water Resources
gwen.huff@water.ca.gov
(916) 651-9672

From: Lila Spring [mailto:lspring@rmcwater.com]
Sent: Friday, February 12, 2016 4:57 PM
To: Huff, Gwen@DWR
Cc: Rob Morrow
Subject: RE: Alternative Population Analysis Goleta

Dear Gwen,

Thank you again for your help polishing the details of this analysis. Below is the updated description of the alternative population analysis conducted for Goleta Water District.

Best regards,
Lila

Population

Agencies are required to recalculate their baseline GPCD figures in the 2015 UWMP with final 2010 U.S. Census data, which was not available until after the 2010 UWMPs were due to DWR. An online population tool with preloaded Census data for the years 1990, 2000, and 2010 was created by DWR and made available to water suppliers for use in calculating service area population. Calculating population for GWD using this tool, however, led to unexpectedly low population numbers. It was determined that the tool's method for distributing population across Census blocks was leading to the exclusion of some of GWD's service area population. It was also discovered during this analysis that the population calculated in 2010 had erroneously included population served by neighboring La Cumbre Mutual Water District. In order to correct for the errors made in 2010 and the underestimate inherent in the DWR population tool, an alternative analysis was performed.

DWR asks that the Census block level be used for alternative population calculations. However, the approach conducted here used block groups –which have larger areas than blocks– for two reasons. First, for the majority of block groups the entire population was contained within GWD's service area. In instances where the block group was split between the service area and another urban area, a GIS based analysis was conducted to determine the portion of the block group population within the service area. This methodology allowed for a refined level of analysis despite the larger size of block groups compared to blocks. Second, block group is the finest level of Census data that is readily available for 1990. Using the block group level for all Census years allowed for consistency in the analysis

To calculate population in Census years, Census block groups for the years 1990, 2000, and 2010 were compared to GWD's water service area boundary in those years using GIS. This was done to determine which Census block groups were served by GWD and to identify the associated population for inclusion in the total service area population. GWD is bordered to the South by the Pacific Ocean, to the North and West by very sparsely populated areas including the Los Padres National Forest and to the East by the City of Santa Barbara water service area. For Census block groups that were partially within the service area with the remaining portion part of Los Padres National Forest or a neighboring rural area, the entire population for the Census block group was counted as part of GWD's service area. Areal imagery was used to confirm that the vast majority of developed areas were within GWD's service area and to validate the inclusion of the full Census block group population in those instances. In instances where the portion of the Census block group not within GWD's service area was part of the City of Santa Barbara, GIS was used to determine the percentage of the geographic area of the block group within GWD's service area. That percentage was then applied to the total population for the block group to determine how much of the population to include as part of the service area population.

Once the population of each block group served by GWD was determined, total service area population was summed for 1990, 2000, and 2010. The population in all other years was determined by first calculating a persons per connection factor for 1990, 2000, and 2010, using the total number of active GWD connections and population. The rate of change was then calculated between the persons per connection value in 1990 and 2000 and between 2000 and 2010, and applied to estimate the persons per connection in all non-Census years. Once the persons per connection value was established for all years 1990 to 2010, it was used in conjunction with the total number of connections in those years to estimate the annual population. The population for 2015 was also needed in order to determine compliance with the 2015 water use target. To do this, the persons per connection rate of change from 2000 to 2010 was extended from 2010 to 2015 to determine the 2015 persons per connection. This 2015 persons per connection was then multiplied by the number of connections to estimate population in that year.

Lila Spring
Water Resources Planner

RMC Water and Environment
2400 Broadway, Suite 300
Santa Monica, CA 90404
P: 310.566.6460

lspring@rmcwater.com | www.rmcwater.com

Complex Challenges | Innovative Solutions

APPENDIX E: GROUNDWATER MANAGEMENT PLAN

Available online at www.goletawater.com/documents

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APPENDIX F: WRIGHT JUDGMENT

Available online at www.goletawater.com/documents

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APPENDIX G: GOLETA WATER DISTRICT CODE SECTION 6.20.070

Available online at www.goletawater.com/documents

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APPENDIX H: WATER SHORTAGE CONTINGENCY PLAN

Available online at www.goletawater.com/documents

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APPENDIX I: SANTA BARBARA COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN AND GOLETA WATER DISTRICT HAZARD MITIGATION PLAN AMENDMENT

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2017 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan

County of Santa Barbara
City of Buellton
City of Carpinteria
City of Goleta
City of Guadalupe
City of Lompoc
City of Santa Barbara
City of Santa Maria
City of Solvang

Submitted to CalOES and FEMA by
Santa Barbara County Office of Emergency Management
Robert Lewin, 805.681.5526, rlewin@sbcoem.org

Prepared with the assistance of
Andrew Petrow, 818.294.5472, petrowa@msn.com

TABLE OF CONTENTS

SECTION 1 INTRODUCTION

Across the United States, natural and manmade disasters have led to increasing levels of death, injury, property damage, and interruption of business and government services. The impact on families and individuals can be immense and damages to businesses can result in regional economic consequences. The time, money and effort to respond to and recover from these disasters divert public resources and attention from other important programs and problems. Santa Barbara County, California recognizes the consequences of disasters and the need to reduce the impacts of all hazards. The elected and appointed officials of the County also know that with careful selection, mitigation actions in the form of projects and programs can become a long-term, cost effective means for reducing the impact of these hazards.

The Santa Barbara County *Multi-Jurisdictional Hazard Mitigation Plan* (the Plan) was prepared and formulated with input and coordination from each incorporated city, the County of Santa Barbara, citizen participation, responsible officials, and support from the State of California Governor's Office of Emergency Services (CalOES) and the Federal Emergency Management Agency (FEMA). The process to update the Plan included nearly a year of coordination with representatives from all of the incorporated cities within the County and County representatives who comprised our Mitigation Advisory Committee (MAC). The Plan guides the Santa Barbara County Operational Area toward greater disaster preparedness and resistance in harmony with the character and needs of the County and its communities.

Mitigation is commonly defined as action(s) taken to reduce or, where possible, eliminate risks to people and property from hazards and their effects. ***Hazard mitigation*** focuses attention and resources on actions that will reduce or eliminate long term risks to persons or property from natural hazards.

The impact of expected yet often unpredictable natural and human-caused events can be reduced through planning. History has demonstrated that it is less expensive to mitigate against disaster damage than to repeatedly repair damage in the aftermath. A mitigation plan states the aspirations and specific courses of action jurisdictions intend to follow to reduce vulnerability and exposure to future hazard events.

It is the County's hope the Plan continues to be used as a tool for all stakeholders to increase public awareness of local hazards and risks, while at the same time providing information about options and resources available to reduce those risks. Informing and educating the public about potential hazards will help County, City residents, and visitors protect themselves against their effects.

The emphasis of the Plan is on the assessment of identified risks, identifying mitigation measures for existing exposures, and ensuring critical infrastructure are capable of surviving a disaster. Hazard mitigation strategies help to eliminate losses by limiting new exposures in identified hazard areas, diverting the hazard by reducing the impact, and developing an awareness of hazard area location to avoid future development.

Federal legislation has historically provided funding for disaster preparedness, response, recovery, and mitigation. The Disaster Mitigation Act of 2000 (DMA 2000) is legislation designed to improve the delivery of mitigation programs through sound and viable planning. The legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. As such, DMA 2000 establishes a pre-disaster hazard mitigation program, outlining requirements for the post-disaster Hazard Mitigation Grant Program (HMGP).

DMA 2000 specifically addresses mitigation planning at the state and local levels. It identifies requirements that allow HMGP funds to be used for planning activities, and increases the amount of HMGP funds available to states that have developed a comprehensive, enhanced mitigation plan prior to a disaster. State, County, and local jurisdictions must have an approved mitigation plan in place prior to receiving post-disaster HMGP funds. These mitigation plans must demonstrate that their proposed projects are based on a sound planning process that accounts for the risk to and the capabilities of the individual communities.

Local governments have certain responsibilities for implementing Section 322, including:

- Preparing and submitting a local mitigation plan;
- Reviewing and updating the Plan every five years; and
- Monitoring Projects.

DMA 2000 is intended to facilitate cooperation between state and local authorities, prompting them to work together. It encourages and rewards local and state pre-disaster planning and promotes sustainability as a strategy for disaster resistance. This enhanced planning network is intended to enable local and state governments to articulate accurate needs for mitigation, resulting in faster allocation of funding and more effective risk reduction projects.

This Plan has been prepared to meet FEMA and CalOES requirements thus continuing the County's eligibility for funding and technical assistance from state and federal hazard mitigation programs, such as the HMGP, Pre Disaster Mitigation, and Flood Mitigation Assistance programs.

SECTION 2 PLAN PURPOSE AND AUTHORITY

Authority to create this Plan is derived from the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), as amended by the Disaster Mitigation Act of 2000 (DMA 2000). The requirements and procedures for mitigation plans are found in the Code of Federal Regulations (CFR) at Title 44, Chapter 1, Part 201 and the associated Interim Final Rule changes. The federal law and associated rule changes and regulations establish planning and funding criteria for states and local communities.

- *Enhance Public Awareness and Understanding* – to help residents of the County better understand the natural hazards that threaten safety and welfare; economic vitality; and the operational capability of critical infrastructure;
- *Create a Decision Tool for Management* – to provide information that managers and leaders of local government, business and industry, community associations, and other key institutions and organizations need to take action to address vulnerabilities to future disasters;
- *Promote Compliance with State and Federal Program Requirements* – to ensure that Santa Barbara County and its incorporated cities can take full advantage of state and federal grant programs, policies, and regulations that encourage or mandate that local governments develop comprehensive hazard mitigation plans;
- *Enhance Local Policies for Hazard Mitigation Capability* – to provide the policy basis for mitigation actions that should be promulgated by participating jurisdictions to create a more disaster-resistant future; and

- Provide *Inter-Jurisdictional Coordination of Mitigation-Related Programming* – to ensure that proposals for mitigation initiatives are reviewed and coordinated among the participating jurisdictions within the County.
- Achieve *Regulatory Compliance* – To qualify for certain forms of federal aid for pre- and post-disaster funding, local jurisdictions must comply with the federal DMA 2000 and its implementing regulations (44 CFR Section 201.6). DMA 2000 intends for hazard mitigation plans to remain relevant and current. Therefore, Local plans (including Santa Barbara County's) are updated every five years. This means that the Hazard Mitigation Plan for Santa Barbara County uses a "five-year planning horizon". It is designed to carry the County through the next five years, after which its assumptions, goals, and objectives will be revisited and the Plan resubmitted for approval. Section 7 details specific goals and objectives with regard to implementing mitigation activities over the life of this Plan. In Section 8, Santa Barbara County has outlined a more aggressive approach to ensuring the Plan is implemented, evaluated, monitored and updated.

On the following pages are the resolutions that adopted the 2017 Plan.

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF SANTA BARBARA, STATE OF CALIFORNIA

A RESOLUTION IN THE MATTER OF THE ADOPTION OF THE 2017 SANTA BARBARA COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN	**Resolution No.** 17-175

WHEREAS, the Federal Disaster Mitigation Act of 2000 ("Act"), as described in 44 Code of Federal Regulations Section 201.6 (44 CFR § 201.6) mandates local governments to submit and maintain a Federal Emergency Management Agency ("FEMA") approved local hazard mitigation plan; and

WHEREAS, the County of Santa Barbara Office of Emergency Management, working with the Public Works Department and other County departments, and has coordinated the hazard mitigation planning efforts among the incorporated cities of the county; and

WHEREAS, the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan, ("Plan") identifies a county-wide risk assessment and mitigation strategies to reduce the impacts of natural, technological, and human caused disasters on the public and local government; and

WHEREAS, identification of hazards in the county assists with response planning, exercise development, public education and awareness, and other emergency management functions; and

WHEREAS, the Act specifies documentation that the Plan has been approved by the FEMA and formally adopted by the Santa Barbara County Board of Supervisors; and

WHEREAS, on June 28, 2017, FEMA approved the County's Plan; and

WHEREAS, the Office of Emergency Management will coordinate the incorporated cities respective Annexes submitted to FEMA for inclusion in the Plan after they are adopted by their City Councils.

NOW, THEREFORE, BE IT RESOLVED, that the County of Santa Barbara Board of Supervisors hereby adopts the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan and directs the Office of Emergency Management to continue its work with the incorporated cities to include their respective Annexes to the Plan.

A Resolution in the Matter of the Adoption of the 2017 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan

PASSED AND ADOPTED by the Board of Supervisors of the County of Santa Barbara, State of California this 22nd day of August, 2017 by the following vote:

AYES: Supervisors Williams, Wolf, Hartmann, Adam, and Lavagnino

NOES: None

ABSTAIN: None

ABSENT: None

JOAN HARTMANN, CHAIR
BOARD OF SUPERVISORS

ATTEST:
MONA MIYASATO
CLERK OF THE BOARD

By __________
Deputy

APPROVED AS TO FORM:
MICHAEL C. GHIZZONI
COUNTY COUNSEL

By __________
Deputy

APPROVED AS TO FORM
RISK MANAGEMENT
RAY AROMATORIO

By: __________

Date: 8/9/17

APPROVED AS TO FORM
THEODORE A. FALLATI, CPA
AUDITOR-CONTROLLER

By: __________

Date: 8.9.17

DIRECTOR OF EMERGENCY MANAGEMENT
ROBERT LEWIN
OFFICE OF EMERGENCY MANAGEMENT

By __________

Date: 8-9-17

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF SANTA BARBARA, STATE OF CALIFORNIA

A RESOLUTION TO INTEGRATE BY REFERENCE THE 2017 MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN INTO THE NEXT SANTA BARBARA COUNTY SAFETY ELEMENT UPDATE OF THE GENERAL PLAN	**Resolution No.** 17-176

WHEREAS, the Governor's Office of Emergency Services (Cal OES) Mitigation Division requires a Board Resolution recognizing the adoption of the County Multi-Jurisdictional Hazard Mitigation Plan into the Safety Element of the County General Plan; and

WHEREAS, the Santa Barbara County Board of Supervisors adopted the revised Safety Element to the General Plan August 10, 2010; and

WHEREAS, the Santa Barbara County Board of Supervisors adopted the FEMA approved Multi-Jurisdictional Hazard Mitigation Plan on this date, August 22, 2017; and

WHEREAS, this Resolution enables Santa Barbara County to qualify for additional mitigation funding after a disaster; and

WHEREAS, the Safety Element of the General Plan currently integrates the Multi-Jurisdictional Hazard Mitigation Plan, in accordance with California Government Code Sections 8685.9, 65302 and 65302.6; and

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of Santa Barbara County hereby accepts and adopts the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan and resolves to integrate the updated Plan by reference into the Safety Element of the General Plan with the next Safety Element update in accordance with the requirements of Government Code sections 65302, 65302.6 and 8685.9 (AB 2140(2006), and there is no possibility that the activity in question may have a significant impact on the environment and is therefore exempt from the provisions of CEQA, General Rule-Section 15061(b)(3).

PASSED AND ADOPTED by the Board of Supervisors of the County of Santa Barbara, State of California this 22nd day of August, 2017 by the following vote:

AYES: Supervisors Williams, Wolf, Hartmann, Adam, and Lavagnino

NOES: None

ABSTAIN: None

ABSENT: None

JOAN HARTMANN, CHAIR
BOARD OF SUPERVISORS

ATTEST:
MONA MIYASATO
CLERK OF THE BOARD

By ____________________
Deputy

APPROVED AS TO FORM:
MICHAEL C. GHIZZONI
COUNTY COUNSEL

By ____________________
Deputy

APPROVED AS TO FORM
RISK MANAGEMENT
RAY AROMATORIO

By: ____________________

Date: 8/14/17

APPROVED AS TO FORM
PLANNING and DEVELOPMENT
GLENN S. RUSSELL,PHD

By: Dianne M. Black
Deputy

Date: 8/14/17

DIRECTOR OF EMERGENCY MANAGEMENT
ROBERT LEWIN
OFFICE OF EMERGENCY MANAGEMENT

By ____________________

Date: 8-14-17

SECTION 3 PLANNING PROCESS

3.1 OVERVIEW

The planning process implemented for updating the Santa Barbara County Multi-jurisdictional Hazard Mitigation Plan (HMP) utilized two (2) different planning teams. The first team is the Mitigation Advisory Committee (MAC) and the second is the Local Planning team. All eight (8) incorporated cities (City of Buellton, City of Carpinteria, City of Goleta, City of Guadalupe, City of Lompoc, City of Santa Barbara, City of Santa Maria, and City of Solvang) joined the County of Santa Barbara in the preparation of this Multi-Jurisdictional Hazard Mitigation Plan. Each of the participating jurisdictions had representation on the MAC and was responsible for the administration of their own Local Planning Team.

The planning process followed the concepts and principles outlined in the Comprehensive Preparedness Guide (CPG) 101. Both the MAC and the Local Planning teams focused on these underlining philosophies:

- *Focus on the mitigation strategy*
  The mitigation strategy is the plan's primary purpose. All other sections contribute to and inform the mitigation strategy and specific hazard mitigation actions.
- *Process is as important as the plan itself*
  In mitigation planning, as with most other planning efforts, the plan is only as good as the process and people involved in its development. The plan should also serve as the written record, or documentation, of the planning process.
- *This is the community's plan*
  To have value; the plan must represent the current needs and values of the community and be useful for local officials and stakeholders. Develop the mitigation plan in a way that best serves your community's purpose and people.
- *Intent is as important as Compliance*
  Plan reviews will focus on whether the mitigation plan meets the intent of the law and regulation; and ultimately that the plan will make the community safer from hazards.

The planning process for the Santa Barbara County Multi-jurisdictional Hazard Mitigation Plan (HMP) incorporated the following steps:

- *Plan Preparation*
  - Form/Validate planning team members
  - Establishing common project goals
  - Setting expectations and timelines
- *Plan Development*
  - Validate and revise the existing conditions/situation within planning area; the *Capabilities Assessment and Hazard Assessment Sections* in the HMP
  - Develop and review the risk to hazards (exposure and vulnerability) within the planning area; the *Vulnerability Assessment Section* in the HMP

    - Review and identify mitigation actions and projects within the planning area; the Mitigation Strategy in the HMP
- *Finalize the Plan*
    - Review and revise the plan
    - Approve the plan
    - Adopt and disseminate the plan

Throughout this process, and though other standard practices, opportunities for public involvement was offered and encouraged. More details about public engagement is provided under Section 3.4.

The MAC team was guided through the planning process; and as material was shared and decisions were made, it was the MAC team's responsibility to bring these findings back to their Local Planning Team. Below is a summary of the collaborative planning process of the MAC and Local Planning team.

During the 2017 update of the HMP, the MAC reviewed several other plans, utilized the information provided, and cross referenced where applicable; including:

- 2011 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan
- 2013 Santa Barbara County Emergency Management Plan
- 2009 Santa Barbara County Comprehensive Plan-Safety Element
- 2016 Santa Barbara County Operational Area THIRA
- 2013 California Enhanced Hazard Mitigation Plan
- 2015 Ventura County Hazard Mitigation Plan
- 2014 San Luis County LHMP

3.2 MITIGATION ADVISORY COMMITTEE (MAC)

3.2.1 MAC Members

The Mitigation Advisory Committee (MAC) is a standing committee that works together throughout the year to discuss and provide input on a variety of activities. The MAC is led by Santa Barbara County Office of Emergency Management and has representation from all of the local jurisdictions, as well as County Departments and CalOES. These representatives also represent other regional agencies such as Fire Protection Districts, Water Agencies, and schools. A press release was also sent out announcing the planning process and soliciting input and involvement from adjacent agencies and the public. This press release is attached in the Appendixes.

The MAC was utilized for the updating of the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan. To assist with this effort Santa Barbara County Office of Emergency Management hired a consultant to support and assist each jurisdiction with their Local Hazard Mitigation Plan; contained as an annex in the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan.

Table 3.1 Members of the Mitigation Advisory Committee 2017

Names	Organization	MAC Member Status
Michael Dyer	Santa Barbara County – Emergency Manager	New Member
Shannon McCrone	Santa Barbara County – Emergency Services Planner	New Member
Robert Troy	Santa Barbara County – Deputy Director Emergency Management	New Member
Tylor Headrick	Santa Barbara County- GIS/Emergency Services Planner	New Member
Rob Hazard	Santa Barbara County Fire – Battalion Chief	New Member
Rudy Martel	Santa Barbara County Agricultural Commissioner	New Member
Joyce Tromp	Santa Barbara County Flood Control	New Member
Jon Frye	Santa Barbara County Flood Control	New Member
Jan Koegler	Santa Barbara County Health	Returning Member
Marc Bierdzinski	City of Buellton – City Manager/Planning Director	Returning Member
Mimi Audelo	City of Carpinteria – Program Manager	New Member
Claudia Dato	City of Goleta – Senior Project Manager (Public Safety)	Returning Member
Gary Hoving	City of Guadalupe – Public Safety Director	New Member
Kurt Latipow	City of Lompoc – Fire Chief	New Member
Yolanda McGlinchey	City of Santa Barbara – Emergency Services Manager	Returning Member
Roy Dugger	City of Santa Maria – Emergency Preparedness Coordinator	Returning Member
Lisa Martin	City of Solvang	New Member
Yvette LaDuke	Cal OES – Emergency Services Coordinator	New Member
Andrew Petrow	Consultant	New Member

3.2.2 Overview of MAC Meetings

The MAC meetings were arranged and scheduled to follow the planning process steps outlined in Section 3.1. Each meeting was designed to walk the MAC members through sections of the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan and annexes. In addition to reviewing and validating material, the intent was to also educate MAC members on the planning process and purpose of each section. By taking this step it will help ensure that each MAC member could bring this knowledge back to their Local Planning Teams. The table below (**Table 3.2**) provides a list and the main purpose of each of the MAC meetings.

Table 3.2 Mitigation Advisory Committee (MAC) Meetings Summary

Date	Purpose
April 2015	**Kick Off (in person)** • Reviewed and discussed the hazards in the Plan; including initial ranking. • Each jurisdiction was asked to review their previous goals and objectives with a local planning team.
December 2015	**MAC Meeting (in person)** • Recap of previous MAC meeting • Goal of the project • Understanding of HMP update requirements • Validation of team members • Proposed Planning Process • Review of Capabilities Assessment Section • Review results of Outreach Survey and incorporate into Plan where necessary
January 2016	**MAC Meeting (conference call)** • Recap of previous MAC meeting • Review of Capabilities Assessment Section • Discussion of public outreach efforts • Preparation for next MAC meeting
February 2016	**MAC Meeting (in person)** • Recap of previous MAC meeting • Review of Hazard Assessment Section • Presentation of Vulnerability Assessment results • Discussion of public outreach efforts • Preparation for next MAC meeting
March 2016	**MAC Meeting (conference call)** • Recap of previous MAC meeting • Review of Capabilities Assessment and Vulnerability Assessment Sections • Preparation for next MAC meeting
April 2016	**MAC Meeting (in person)** • Recap of previous MAC meeting • Initial discussion of mitigation projects and actions
May 2016	**MAC Meeting (conference call)** • Recap of previous MAC meeting • Discussion of mitigation actions and projects • Discussion of update process • Preparation for next MAC meeting

Date	Purpose
June 2016	**MAC Meeting (in person)** • Recap of previous MAC meeting • Discussion of mitigation actions and projects • Discussion of update process

3.3 County Local Planning Team

3.3.1 Local Planning Team Planning Process

Meetings were conducted to review the existing Hazard Mitigation Plan, update the capabilities and hazard assessments, and discuss existing, recurring, or new mitigation strategies. This Plan was developed as a county-wide hazard mitigation plan focusing on collaboration to implement mitigation strategies throughout the county, while maintaining accountability within each participating City to identify and track specific mitigation actions.

Each of the following sections detail the methodologies for development and updates since the 2011 Plan. The *Capability Assessment* (Section 4) has been updated to reflect changes in county departments and organizational structure. As necessary, the discussions of local planning documents have been revised to reflect updates since 2011.

The *Hazard Assessment,* detailed in Section 5, presents the methodology in which the Local Planning team reviewed the previously identified hazards and discussed revisions to their prioritization. A profile for each hazard is included which summarizes the type of hazard, location and extent, history of past occurrences, and probability of future occurrences. The hazard identification and ranking documented in this section form the foundation for prioritizing mitigation actions.

The Local Planning team reviewed the previous *Mitigation Strategy* and reported on progress made in implementing the listed actions. In addition, based on updates to the hazard identification, profiles, vulnerability assessments, and the capability assessment new mitigation actions were identified. The progress report and new mitigation actions are presented in the updated *Mitigation Strategy* (Section 7).

The Local Planning team held regular meetings and continually worked on the Plan. The Local Planning team coordinated and consulted with other entities and stakeholders to identify and delineate natural hazards within the County to assess the risks and vulnerable property in identified hazard areas. From the start, every attempt was made to establish an open public process to provide an opportunity for all sectors of the overall community to be involved in the planning process. In some cases direct public input was successful and in others the residents were represented in the process by their jurisdictions staff, by necessity.

3.3.2 Local Planning Team Members

Table 3.3 lists the members of the Santa Barbara County Local Planning Team. These individuals collaborated to identify/validate the unincorporated County's critical facilities, provide relevant information/material (i.e., plans), review/update sections, and report on progress and suggest new mitigation actions.

Table 3.3 County Planning Committee 2017

	Name	Title
Office of Emergency Management	Michael Dyer	Emergency Manager
	Shannon McCrone	Emergency Services Planner
	Robert Troy	Deputy Director Emergency Management
Fire	Rob Hazard	Battalion Chief
Community Services	George Chapjian	Director
Flood	Jon Frye	Engineering Manager
Public Works	Tom Fayram	Deputy Director
General Services	Anne Fearon	Enterprise Leader-Special Project Manager
Planning	Matthew Schneider	Deputy Director
	Mindy Fogg	Supervising Planner
Ag Commissioner	Rudy Martel	Deputy Commissioner
GIS	Tylor Headrick	Office of Emergency Management

3.3.3 Overview of Local Planning Team Meeting

The County Planning Committee met regularly during the planning process to discuss data needs and organize data collection.

Table 3.4 County Planning Committee Meetings Summary

Meeting Dates	Summary of Discussions
January 2016	**Meeting #1:** Discussed sections 1-4 update, also agreed to insert a County Land Use Section; The committee also agreed to standardize County GIS mapping, if possible.
March 2016	**Meeting #2:** Discussed Hazard Assessment (section 5) update; reviewed and agreed upon on 33 identified hazard profiles for the County; discussed hazard impacts on the County and agreed to the three scenarios for HAZUS run event (100-year flood event, San Luis Range South Margin Earthquake, and Red Mountain Range North Margin Earthquake); Agreed to use the Probability v. Impact Matrix for hazard prioritization.
May	**Meeting #3:** Discussed Vulnerability Assessment (Section 6) update; defined critical

Meeting Dates	Summary of Discussions
2016	facilities for the County; reviewed and revised the critical facilities list from 2011 plan; Reviewed the HAZUS default data and the three scenarios from the HAZUS run event; Agreed to run three types of hazard vulnerability methods (scientific Loss Estimation, Analysis of Exposure to Critical Facilities, and Qualitative Estimation of Impacts); Discussed steps for the update of County Mitigation Strategies (Section 7).
June 2016	**Meeting #4:** Discussed Mitigation Strategies (Section 7) update; reviewed Future Projects from 2011 Plan; categorized those projects by responsible Department/Agency; reviewed final timeline for plan update.

3.4 Public Outreach

There were two different Public Outreach campaigns used during the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan update process: the first informing the Community of HMP Update, and the second educating the Community of Hazards. The second campaign (educating of the Community of Hazards) is an ongoing campaign that was leveraged during the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan update process. Below is a summary of the campaigns:

3.4.1 Informing the Community of the HMP Update process

In July 2015, Santa Barbara County Office of Emergency Management issued a press release (in Spanish and English) announcing the commencement of the hazard mitigation planning process. This announcement invited the public to notify the County of their interest to participate in the planning process or submit comments.

Additionally, as part of the Public Outreach effort, Santa Barbara County Office of Emergency Management participated in a Radio interview and held two workshops to present the updates and solicit input from the public. Final drafts of the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan were also made available to the public through the Aware and Prepare Website and hard copies were available in select Public Libraries. Input from the public was presented to both the MAC and Santa Barbara County Local Planning Team for consideration of incorporation into the HMP.

3.4.2 Ongoing Public Outreach

The County of Santa Barbara utilizes several platforms to educate the public about hazards in the community, relevant programs to safeguard and protect themselves from disaster, and actions they can take to prepare themselves for events. Below is a list of the different platforms used and a brief summary of the some of the programs:

- County Aware and Prepare Website
- Social Media (Facebook, Twitter)

- Meetings/Workshops
- Public Service Announcements- radio and television
- Public Surveys
- Community Emergency Response Team Training (CERT)
- Defensible Space Education
- Evacuation training for Schools and Communities
- Drought Education
- Flood emergency awareness

As part of the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan process, the County issued a public survey (in Spanish and English) to seek input from the community about would prioritize hazards facing the county and what government officials could do to better communicate the risk. Hard copies of the bilingual surveys were also made available on public counters within the County offices and several City planning departments. The County posted a notification on their Facebook page and sent emails to key stakeholder groups such as the CAER Chapter (a government-industry group) and the Santa Barbara County Fire Safe Council about the survey.

SECTION 4 COUNTY CAPABILITY ASSESSMENT

4.1 SANTA BARBARA COUNTY - INTRODUCTION

Santa Barbara County, one of 58 counties in the State of California, was established on February 18, 1850. The County is located approximately 300 miles south of San Francisco and 100 miles north of Los Angeles, and covers 3,789 square miles, nearly 1,061 square miles (28%) of which is water and 2,735 square miles (72%) of which is land area. Elevation ranges from sea level to 6,820 feet at Big Pine Mountain. A corner of Kern and San Luis Obispo Counties border it to the north, Ventura County to the east, and the Pacific Ocean to the west and south. The County has 110 miles of coastline, and one third of the land area is located in the Los Padres National Forest.

Santa Barbara County is comprised of eight incorporated cities and 14 unincorporated communities including Vandenberg Air Force Base. According to the 2010 Census, the County's total population was 423,895 with a median household income of $62,779. Santa Barbara is currently the 19th most populous County in the state.

The following subsections provide an overview of the *Economy, Physical Features, Infrastructure,* and *Jurisdictional Summaries* for the County of Santa Barbara.

4.1.1 Economy

Santa Barbara can be subdivided into three economic regions, North County, Central County, and the South County. Each region has unique features which influence the economics of the area.

The North County is part of the central California coastal region. It is defined by the Santa Maria and Lompoc Valleys with several different communities, including Vandenberg Air Force Base. The presence of the base in the area has generated a variety of business opportunities, causing the region to evolve away from a strictly agriculture-based economy into one that is more diverse with hospitality, retail, and financial services.

The Central County is known primarily for its vineyards, horse ranches, Bed-and-Breakfasts and Cachuma Lake. Visitors come to the Los Padres National Forest and Cachuma Lake for a variety of outdoor activities including camping, boating, fishing, hiking, and rock climbing. The Danish village of Solvang also attracts a number of tourists to the region throughout the year.

The South County's economy is based largely on tourism, education, and services. Several educational institutions are located in South County including Westmont College and the University of California-Santa Barbara. Many festivals in South County attract visitors throughout the year. In addition to education and tourism, a variety of technological and agricultural businesses have headquarters in Goleta and Carpinteria. The City of Santa Barbara is the retail center of the region. The result is a healthy and diverse economy in the South County.

Agriculture is a major industry throughout the entire County and provides a significant opportunity for employment. A large percentage of the County's undeveloped area is devoted to agriculture. In spite of pressures from urbanization and foreign imports, agriculture continues to thrive. The top five crops by value are:

Strawberries: $464.7 million
Wine grapes: $155.3 million
Broccoli: $137.4 million
Cut flowers: $105.0 million
Nursery products: $86.0 million

Due to the significance that agriculture has on the economy and landscape of Santa Barbara County, impacts on agriculture from most of the hazards specified in this plan are identified.

4.1.2 Employment

Santa Barbara's percent unemployed in the civilian labor force, according to the July 2017 State of California Employment Development Department, was 4.7%. The top three Employers in the County are Higher Education, Department of Defense, and Local Government.

4.1.3 Climate

The Mediterranean climate in the Santa Ynez Valley is considered one of the finest in California. Temperatures in the winter range from an average of 33-degree lows at night to 55-degree highs during the day and in the summertime the daytime highs range in the 70s and 80s with lows ranging in the 50s and 60s. The Cuyama Valley has consistently warm days and cold nights, with gentle breezes keeping temperatures mild in the afternoon, and down-valley breezes cooling things off at night. In the mountains the climate is still considered Mediterranean, with mild rainy winters and warm dry summers.

4.1.4 Physical Features

Santa Barbara County has a mountainous interior, primarily made up of three mountain ranges; the Santa Ynez Mountains, the San Rafael Mountains, and the Sierra Madre Mountains. Most of the mountainous region is within the Los Padres National Forest. The forest contains the San Rafael and the Dick Smith Wildernesses. The valleys, especially those along the coast, is where the majority of the County's population resides. The cities of Santa Barbara, Goleta, and Carpinteria are all along the south coast, in the coastal plain south of the Santa Ynez Mountains. The Cuyama Valley in the north part of the County is less populated and more arid; oil production, ranching, and agriculture are the dominant land uses there. The County also includes four of the eight Channel Islands in the Pacific Ocean: San Miguel Island, Santa Barbara Island, Santa Cruz Island, and Santa Rosa Island. Santa Cruz Island is the only one of the four that is privately owned by The Nature Conservancy who has owned it since 1987. The other islands are part of the Channel Islands National Park.

Due to the Mediterranean climate of Santa Barbara County and the variability of rainfall, stream flow throughout the County is highly variable and directly impacted from rainfall with little snowmelt or base flow from headwaters. Most streams in the County are dry during the summer months. Many streams in the County have flows that rise and fall in response to precipitation. Watercourses can experience a high amount of sedimentation during wet years and high amounts of vegetative growth during dry and moderate years.

The drainages in the southern part of the County are characterized by high intensity, short duration runoff events, due to the relatively short distance from the top of the Santa Ynez Mountains to the Pacific Ocean. The drainages in the northern part of the County are contained in the upper mountain areas, but broaden out into level coastal plains. The drainages in the northern part of the County are generally characterized by longer duration and less intense storms than the southern coastal areas. The majority of streams in Santa Barbara County only flow during winter months.

There are four (4) major reservoirs located in the County: Lake Cachuma, Twitchell, Gibraltar, and Jameson Lake. Lake Cachuma, Gibraltar Reservoir, and Jameson Lake are located along the Santa Ynez River, in North County. Lake Cachuma is the largest reservoir along the Santa Ynez River, with a drainage area of 421 square miles upstream of the Bradbury Dam. Gibraltar Reservoir has a drainage area of 214 square miles upstream of Gibraltar Dam and Jameson Lake has a drainage area of 14 square miles upstream of Juncal Dam.

In North County, the Twitchell Reservoir is located along the Cuyama River. The Cuyama River Basin has a drainage area of approximately 1,140 square miles and it is the confluence of the Cuyama and Sisquoc Rivers that form the Santa Maria River. The Twitchell Reservoir has a drainage area of 1,135 square miles above Twitchell Dam.

The County is divided into five (5) major watersheds: Santa Maria, Cuyama, San Antonio, Santa Ynez River, and South Coast. The Santa Maria Watershed includes the Cuyama and Sisquoc watersheds. The drainage areas for these watersheds are:

Watershed	Drainage Area
Santa Maria	1,845 square miles
Cuyama	1,140 square miles
San Antonio	165 square miles
Santa Ynez River	900 square miles
South Coast	416 square miles

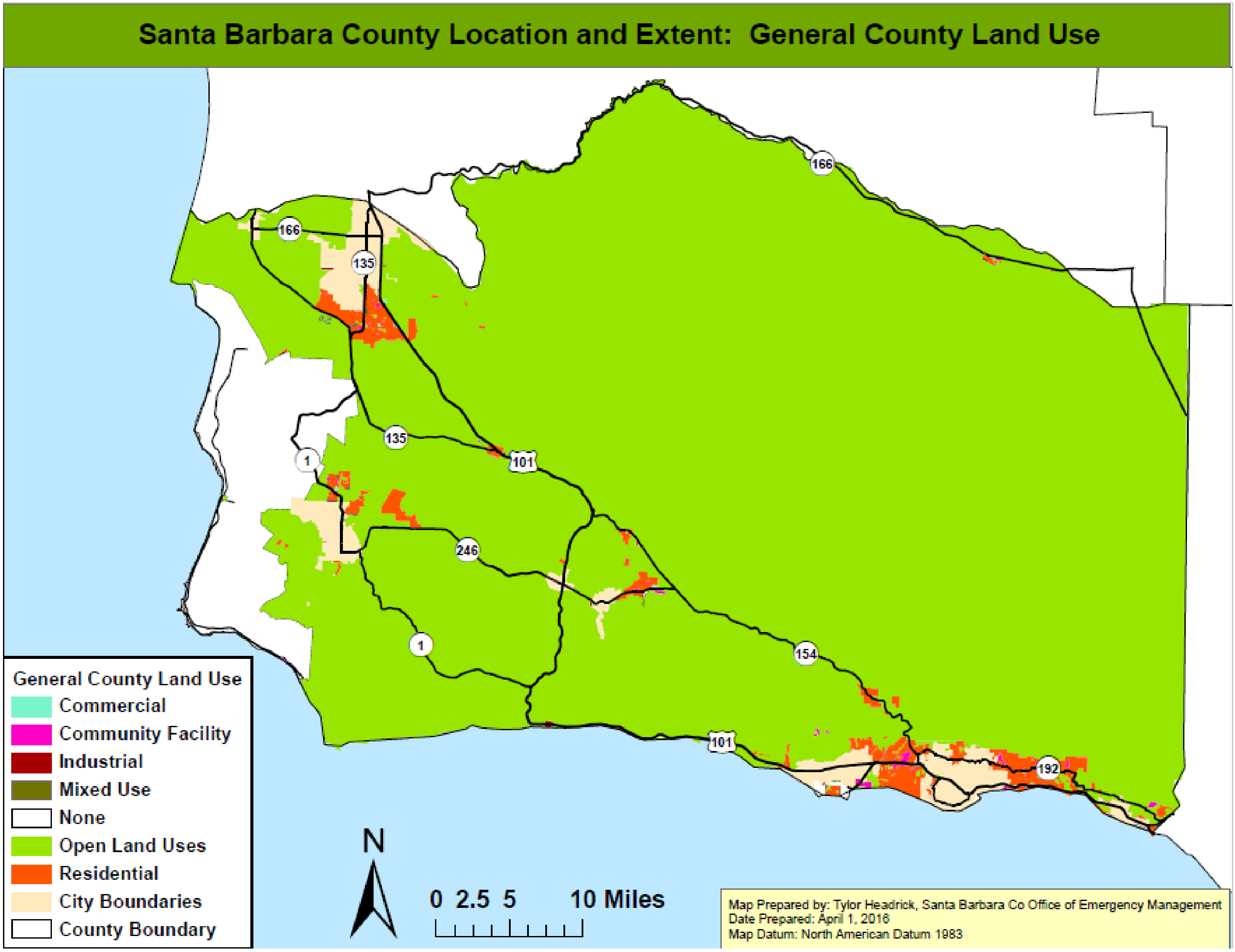
4.1.5 Infrastructure

The infrastructure of Santa Barbara County supports its industries and residents. The Public Works Department maintains over 1,668 lane miles of major roads and local streets in the unincorporated portions of the County, including over 112 bridges. There are five airports in the County of Santa Barbara; Lompoc Airport, Santa Barbara Airport, Santa Barbara Municipal Airport, Santa Maria Public Airport, and Santa Ynez Airport. The County has been producing oil and gas since the late 1800’s. It was in 1896 that oil producers constructed piers to access the underwater portion of the Summerland Oil Field, marking the beginning of offshore oil production. Several operational oil platforms are located along the Coast of Santa Barbara County, including one in the tidewaters. Groundwater is the primary source of potable water for many County residents. However, river water and rain water is collected into reservoirs and treated, serving the majority of the South County population. However, the County has experienced excessive drought conditions over the last five years, nearly depleting its water resources. The Cachuma and Twitchell Reservoirs are owned by the federal government, administered by the Water Resources Division, and operated by local water purveyors. Prolonged drought has resulted in the installation of a pump in Cachuma Lake that will be used to pump out water from the deepest portion of the lake, if needed. The Gibraltor Reservoir is owned and operated by the City of Santa Barbara, and serves its residents. Jameson Reservoir is operated by the Montecito Water District and its water is delivered to the south coast via three tunnels through the Santa Ynez Mountains.

4.1.6 Land Use-Unincorporated County

Santa Barbara County is known for its natural scenic resources. The coastal terraces between ocean and mountains, the scenic inland valleys with large expanses of cultivated farmlands and gently rolling hillsides, and the rugged Los Padres National Forest are all key elements that define the county’s resources. The unincorporated county is largely rural in character, with distinct compact urban communities separated by public open space and private grazing lands. The foothill elevations typically reach about 800 feet above sea level. The mountain ranges crest between four and five miles inland (north and east) from the coast and reach elevations between 3,200 and 3,800 feet above sea level. **Figure 4.1** shows General County Land Use overall.

Figure 4.1 General County Land Use



Santa Barbara County contains five main geographical sub regions for land use: 1) the South Coast Area, 2) Santa Maria Valley, 3) Lompoc Valley, 4) Santa Ynez Valley, and 5) Cuyama Valley. Development over the last five years in these sub regions, much like the county as a whole, has been limited to infill type projects; there has been no major new development. Additionally, there are no major planned development projects. However, any new major development will need to meet all current building codes and standards. This includes an assessment of the development against the Comprehensive Plan, especially the Safety Element which has incorporated lessons learned from the Multi-Jurisdictional Hazard Mitigation Plan update process. Descriptions of each of these sub regions follow.

1. **South Coast Area:**

The South Coast Area sub region is the largest designated urbanized area in the county, covering approximately 130 square miles, and includes the cities of Santa Barbara, Goleta, and Carpinteria. This coastal area is characterized by numerous canyons between the foothills of the Santa Ynez Mountains and the Pacific Ocean. The unincorporated communities and sub-areas of the South Coast Area include: Summerland, Montecito, Toro Canyon, Mission Canyon, Eastern Goleta Valley, Isla Vista, and the Gaviota Coast.

Summerland

Summerland is located in southern Santa Barbara County between the Cities of Santa Barbara and Carpinteria, and is bordered by Ortega Ridge Road on the west, the Montecito Planning Area on the north, Padaro Lane on the east, and the Pacific Ocean on the south. Summerland is bisected by two major transportation corridors: U.S. Highway 101 and Union Pacific Railroad (UPRR), used by passenger and freight trains. These major transportation corridors separate most of the community from the Pacific Ocean.

Summerland is separated into two subareas: the urban area (where land uses are primarily residential), mixed-use, commercial, and the rural area (where land use is dominated by large residential developments and agricultural). Summerland's exiting land use includes: 249 acres of agriculture, 13 acres of commercial, 185 acres of residential, 235 acres of residential ranchette, and 38 acres of recreational. The area encompasses 706 existing residential units. Summerland currently has a small commercial strip centered on Lillie Avenue adjacent to U.S. Highway 101, and has a total of 111,004 sq. ft. of commercial development.

Montecito

Montecito is a low to medium density residential community comprising 13 square miles and 8,965 people. The community lies between the Pacific Ocean and the foothills of the Santa Ynez mountain range, with the City of Santa Barbara to the west and the community of Summerland to the east. The community contains approximately 3,010 residential units. The central urban sub-area, which lies between the Los Padres National Forest and U.S. Highway 101, is characterized by about 2,200 low-density residential parcels. The central urban sub-area also contains Montecito's only commercial center and Public Park. Montecito's coastal sub-area, which lies to the south of U.S. Highway 101, encompasses 290 acres, all of which exist in the Coastal Zone. The coastal sub-area is primarily developed with medium to high density residential. The mountain sub-area extends to the north of the Los Padres National Forest boundary and occupies the northern portion of the Montecito Planning Area. The mountain sub-area encompasses 9,984 acres and is dominated by mountainous open space with few residential units.

Toro Canyon

Toro Canyon is an area of mixed rural and semi-rural, agricultural and low-density residential uses of approximately 5,950 acres. Toro Canyon's existing land uses include large expanses of agriculture, a few concentrated and many scattered residential developments, two small commercial areas, recreation and undeveloped open space. The Toro Canyon Plan Area includes approximately 1,000 parcels and the following land uses: 850 residential units; 61,665 sq. ft. of commercial and industrial space; 5,236,132 sq. ft. of greenhouses and related development; 88,545 sq. ft. of institutional/educational development; and 130,399 sq. ft. of other non-residential development. Major access roads into Toro Canyon include U.S. Highway 101, Via Real and State Route 192 (East Valley Road/Foothill Road).

Santa Claus Lane and Via Real at the eastern Padaro Lane/Highway 101 interchange are the only commercial areas in Toro Canyon. Residential development is scattered throughout Toro Canyon, generally with larger parcels to the north and smaller parcels to the south. Several neighborhoods with parcel sizes between 7,000 square feet to one acre exist in southern Toro Canyon, including beach front properties along Padaro Lane and Rural Neighborhoods (RNs) surrounded by agricultural and rural land. Upper Toro Canyon (generally north of East Valley Road and Paredon Ridge) residential development is characterized by parcel sizes of five acres or greater, and is generally associated with either agricultural uses or large estates.

Toro Canyon contains almost 2,700 acres designated for agriculture with zoning ranging from AG-I-5 (minimum 5-acre lots) to AG-II-100 (minimum 100-acre lots). In addition, almost 1,400 acres are designated Mountainous Area, with zoning that allows existing agricultural use along with some permit requirements for agricultural expansion.

Toro Canyon supports a high diversity of biological resources, including southern oak riparian woodland, coastal scrub and chaparral. The watersheds of both Toro Creek and Arroyo Paredon Creek support stretches of relatively undisturbed habitat serving as wildlife corridors between the mountainous Los Padres National Forest and the Pacific Ocean.

Mission Canyon

The Mission Canyon area is located in the foothills of the Santa Ynez Mountains, north of and adjacent to the City of Santa Barbara. Mission Canyon’s 1,122 acres contain 1,141 parcels and support residential development, agriculture, and open space. There is no commercial or industrial development. Residential development occurs throughout the area, generally with larger parcels to the north and smaller parcels to the south. Residential parcels range from under 7,000 sq. ft. to over 40 acres. The South Foothill sub-area falls to the south of Foothill Road, and comprises 143 acres with 258 parcels that average 0.5 acre in size. The Mission Canyon Heights sub-area contains 550 parcels within its 160 acres of steeply sloped terrain, and averages about 0.5 acre per parcel. Finally, the Upper Mission Canyon sub-area comprises 817 acres of terrain occupied by low-density residential and open space. Several popular hiking trailheads are located in this sub-area.

Mission Canyon supports a diversity of biological resources, including coast live oak riparian woodland and chaparral. The upper watershed of Mission and Rattlesnake Creeks supports stretches of relatively undisturbed habitat serving as wildlife corridors within the area. The Mission Canyon Scenic Corridor runs north to south through the entire area.

Eastern Goleta Valley

Eastern Goleta Valley is located between the City of Santa Barbara and the City of Goleta. The unincorporated coastal plain and foothills reaching from Camino Cielo Road on the north to the Pacific Ocean on the south covers approximately 23,300 acres of between the Cities of Santa Barbara and Goleta. Of this area, about 15,300 acres lie within the designated Rural Area, and 7,900 acres lie within the designated Urban Area where the majority of the approximately 36,000 residents of Eastern Goleta Valley live. Eastern Goleta Valley is largely suburban residential in character, providing a range of residential types, including single family, condominium, apartment and mobile home types in the Urban Area, with ranchette neighborhoods on the peripheral areas of Hope Ranch and the foothills. There are currently 10,222 residential units in the area. There is a total of 3,187,463 sq. ft. of commercial development in Eastern Goleta Valley, most of it concentrated along the Hollister Avenue – State Street corridor. The mid to higher elevations of Eastern Goleta Valley are designated as mountainous areas and are characterized by rugged terrain, habitat areas, headwaters of local watershed sub-basins, and clusters of rural residential neighborhoods. Much of the mountainous area lies within the boundaries of Los Padres National Forest, which is owned both publicly and privately. Per the Land Use Element, minimum parcel size in this area ranges from 40 to 320 acres, with 5- to 20-acre minimum parcel size residential zoning. The foothills of Eastern Goleta Valley support rural agriculture, typified by orchards, large parcel crop productions, and grazing land.

Isla Vista

Isla Vista is an unincorporated community located 9 miles west of the City of Santa Barbara. Surrounded on three sides by the University of California, Santa Barbara (UCSB), Isla Vista is located on a coastal bluff overlooking the Pacific Ocean. The current population of Isla Vista is approximately 20,000, and the area is ½ square mile. Much of Isla Vista is a densely populated residential community, with one of the highest concentrations of people in the state (62.5 people per acre). Isla Vista's downtown area is located on the eastern edge of the community adjacent to the UCSB Main Campus and contains 134,000 sq. ft. of commercial development.

Gaviota Coast

The Gaviota Coast is a 158 square mile (101,199 acres) unincorporated area of coastal plains and foothills north of the City of Goleta that contains 1,006 parcels with an average size of 110 acres. The area is bounded by Vandenberg AFB to the west, the Pacific Ocean on the South, the crest of the Santa Ynez Mountains on the north, and the City of Goleta to the east. Highway 101 is the primary thoroughfare, while Highway 1 provides access to the Lompoc Valley.

Agriculture is the predominant land use designation with 77,820 acres, followed by Mountainous Area of 26,051 acres, recreation/open space of 5,562 acres, and other miscellaneous designations for the balance of 2,266 acres. Much of the agricultural land includes Los Padres National Forest in the inland portions of the Gaviota Coast. Cattle's grazing is the primary agricultural use, in addition to orchards and other agricultural operations. The Los Padres National Forest covers 15,634 acres on the Gaviota Coast, and is owned by the U.S. Federal Government. Three major State parks and one County park exist within the Gaviota Coast: Gaviota State Park, El Capitan State Beach, Refugio State Beach, and Jalama Beach County Park. Commercial land uses in the Gaviota Coast are limited to approximately 100 acres of oil facilities contained within three industrial developments: Plains Exploration and Production Company (PXP) Point Arguello, ExxonMobil's Las Flores Canyon Processing Facility, and the Tajiguas Landfill. Residential development in the area is broadly dispersed, with single-family homes located on large agricultural zoned parcels. An exception is the small pocket of rural residential development at Arroyo Quemada, and developed smaller agricultural parcels at El Capitan Ranch and the upper reaches of Refugio Road near West Camino Cielo. A total of approximately 234 existing single-family dwellings exist in the Gaviota Coast.

2. **Santa Maria Valley:**

This sub region includes the Santa Maria Valley urbanized area. This urban area is the largest retail trade center in the North County. The valley is situated in the northwest corner of the county and is bounded by the Santa Maria River to the north, the Casmalia Hills to the west, the San Rafael Mountains to the east, and the

Solomon Hills to the south. The unincorporated communities of Orcutt and Los Alamos are located in this area, as are the cities of Santa Maria and Guadalupe. The land use outside these urbanized zones is largely rural in character, and dominated by cultivated agriculture, grazing, and open space.

Los Alamos

Los Alamos is a residential community located in a narrow valley transverse by the San Antonio Creek watershed between the Purisima Hills and the Solomon Hills approximately 15 miles southeast of the City of Santa Maria. The community is approximately one square mile, or 460 acres in area, with a population of about 1,900. The urban area is primarily composed of 10,000 sq. ft. residential lots. Agricultural land surrounding the community consists of large parcels (100 acres or greater), most of which are currently under active Williamson Act contracts.

Orcutt

The community of Orcutt is located immediately south of the City of Santa Maria and encompasses 14,650 acres with 10,300 parcels and approximately 11,000 residential units. There is 609,000 sq. ft. of commercial, industrial, or institutional development. Orcutt's central urban core is located in the northern part of the township and comprises 3,600 acres and 8,250 residential units. All of Orcutt's major commercial development is located in this area. South and West Orcutt are primarily low to medium density residential, with approximately 2,400 residential units in the 10,000 acre area. Agriculture dominates the land use outside the urban core and residential areas, with approximately 7,000 acres of land designated for agriculture in Orcutt, of which 6,000 is in production.

3. Lompoc Valley:

The Lompoc Valley is located in the mid-western portion of the county, adjacent to Vandenberg Air Force Base, and is separated from the rest of the county by the Purisima, Santa Rita, Santa Rosa, and White hills. The Santa Ynez River also traverses the Lompoc Valley in a westerly direction and eventually drains into the Pacific Ocean. This area includes the city of Lompoc and the unincorporated communities of Vandenberg Village and Mission Hills. Vandenberg Village is located in the Lompoc Valley at the westerly end of the Santa Ynez River Basin, and is bordered by Vandenberg AFB to the west and the City of Lompoc to the south. Vandenberg Village has a population of approximately 6,497 and is 5.2 square miles. The low to medium density residential core is surrounded primarily by agriculture and open space.

4. Santa Ynez Valley:

The Santa Ynez Valley is located in central Santa Barbara County, adjacent to the Cachuma Lake Recreation Area. The area extends north from the Santa Ynez River to the Woodstock Ranch and Oak Trails subdivisions, and east from the western outskirts of the City of Buellton to the Rancho Estates neighborhood. The Santa Ynez Valley is located at the base of several converging mountain ranges, including the San Rafael and Santa Ynez mountains, and the Purisima and Santa Rita hills. The Santa Ynez River is located to the south of this valley. The area is approximately 72 square miles (46,933 acres) and includes the unincorporated communities of Santa Ynez, Ballard, and Los Olivos.

The Santa Ynez Valley area contains 3,901 parcels with a net area of approximately 45,380 acres. Agriculture is the predominant land use designation with 43,441 acres, followed by residential at 1,580 acres, commercial at 110 acres, and industrial at 51 acres. The Santa Ynez Valley Community Plan separates the area into three distinct land use types: rural, inner-rural, and urban townships. About half of the area (22,915 acres) is designated as rural, with parcels larger than 40 acres and large-scale agricultural users. Inner-rural land, which surrounds the townships and is home to agriculture, recreational, and ranchette-style residential parcels of 5 to 40 acres, accounts for 20,434 acres of the area. The remaining 2,031 acres are designated as urban land use, or townships. Approximately 56% of the areas 9,850 residents reside in the three townships, which offer low to medium density residential development.

The township of Santa Ynez is located east of the City of Solvang and west of the junction of Highways 154 and 246. Approximately 4,000 residents inhabit the township's 1,565 acres, and land use is predominantly lower density residential surrounding a downtown commercial center located in the southeastern part of the town. The 137 acre reservation of the Santa Ynez Band of Chumash Indians is located within the urban boundary of Santa Ynez.

The township of Los Olivos is located in the northern part of the Santa Ynez Valley region, and consists of 287 acres with a population of approximately 1,000 people. There is a 22 acre commercial district at the northern end of the township. Low to medium density residential surrounds the commercial core and accounts for over 85% of the total land area of the township.

Located north of Santa Ynez and south of Los Olivos, the community of Ballard has an estimated 500 residents and encompasses 94 acres and 118 parcels. 75% of the township is designated for residential use, with approximately four acres of commercial property. A mix of smaller agricultural parcels (5 to 40 acres) surrounds Ballard.

5. **Cayuma Valley:**

The Cuyama Valley is isolated in the far northeastern portion of the county and is a large agricultural area bounded by the Caliente Mountain Range to the north and the Sierra Madre Mountains to the south. The San Andreas Fault is located to the east of the Cuyama Valley and travels in a northwest direction. The valley is bisected by the Cuyama River and includes the communities of Cuyama and New Cuyama. The area has a population of approximately 500, mostly concentrated in the community of New Cuyama.

4.2 Administrative and Technical Capacity

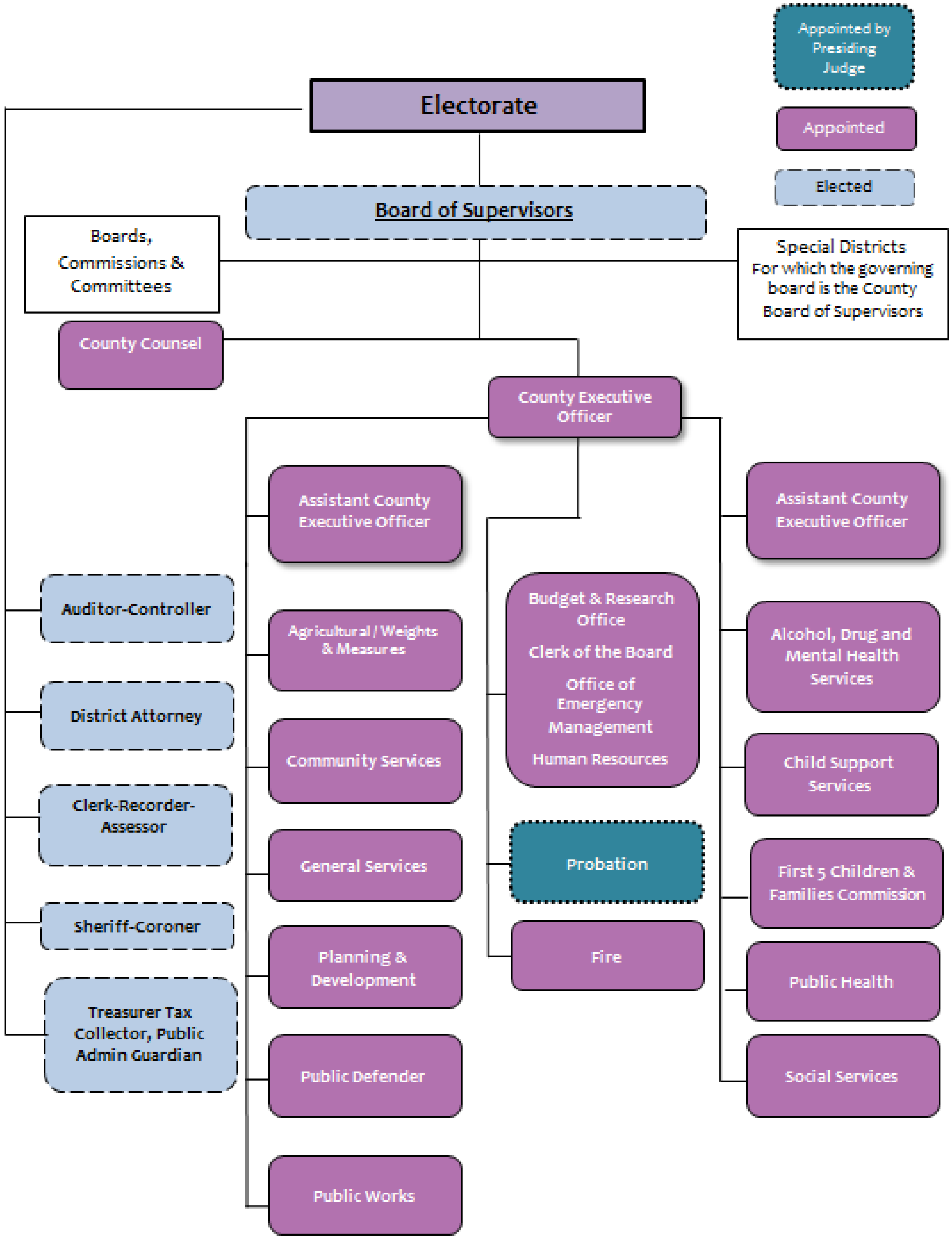
The County Local Planning Team identified current capabilities and mechanisms available for implementing hazard mitigation activities. This section includes a summary of departments and their responsibilities associated with hazard mitigation planning.

4.2.1 The Roles of County Departments in Hazard Mitigation

The following is a summary of County departments and their responsibilities related to hazard mitigation planning and implementation; as well as existing planning documents and regulations related to mitigation efforts within the community. The administrative and technical capabilities of the County, as shown in Table

4.3 provides an identification of department resources available to implement the actions identified in the mitigation section of the Plan. Specific resources reviewed include those involving technical personnel such as planners/engineers with knowledge of land development and land management practices, engineers trained in construction practices related to building and infrastructure, planners and engineers with an understanding of natural or manmade hazards, floodplain managers, surveyors, personnel with GIS skills and scientists familiar with hazards in the community. **Figure 4.2** shows the specific County departments that will have a significant role in implementing the Plan.

Figure 4.2 County Organization



Many of the programs and plans of these departments, with applicability and links to loss reduction efforts are detailed below.

4.2.1.1 Santa Barbara County Office of Emergency Management

The Santa Barbara County Office of Emergency Management (OEM), a division of the Santa Barbara County Chief Executive Office is responsible for emergency planning and coordination for the Santa Barbara Operational Area; which includes:

Cities:	Buellton, Carpinteria, Goleta, Guadalupe, Lompoc, Santa Barbara, Santa Maria, Solvang
Communities/Special Districts:	Gaviota, Hope Ranch, Painted Cave, Surf, Ventucopa, Cachuma Operations and Maintenance Board, Cachuma Resource Conservation District, Carpinteria Sanitary District, Carpinteria Valley Water District, Carpinteria-Summerland Fire Protection District, Embarcadero Municipal Improvement District, Goleta Cemetary District, Goleta Sanitary District, Goleta Water District, Goleta West Sanitary District, Isla Vista Recreation and Park District, Lompoc Healthcare District, Los Alamos Community Services District, Mission Hills Community Services District, Montecito Fire Protection District, Montecito Sanitary District, Montecito Water District, Mosquito and Vector Management District of Santa Barbara County, Santa Barbara County Air Pollution Control District, Santa Barbara County Fire Protection District, Santa Maria Public Airport District, Santa Maria Valley Water Conservation District, Santa Ynez Community Services District, Vandenberg Village Community Services District.
Volunteer Organizations:	American Red Cross, Amateur Radio Emergency Services (ARES), Equine Evacuation, Montecito Emergency Response & Recovery Action Group (MERRAG), Voluntary Organizations Active in Disasters (VOAD).
Industry Groups:	CAER-Community Awareness and Emergency Response, Petroleum industry mutual aid group, SBIA-Santa Barbara Industrial Association.
Tri-County Coordination:	Santa Barbara County OEM also coordinates with adjoining offices of emergency services in Ventura and San Luis Obispo Counties.

OEM is responsible for the following activities:

- Maintain the Santa Barbara County Emergency Management Plan.
- Maintain the Operational Area Emergency Operations Center (EOC) in a state of operational readiness.
- Maintain a trained cadre of EOC team members for EOC activations.
- Provide ongoing leadership and coordinate disaster plans and exercises with the eight cities throughout the County.
- Assist County departments with emergency plans to address how they will perform during disasters.
- Assist County Departments’ facility emergency plans for occupied County facilities.

- Provide ongoing training for County department emergency coordinators.
- Participate in public information campaigns for all hazards through the Aware and Prepare Campaign, public venues and various media presentations.

The Santa Barbara County Office of Emergency Management, within its duties noted above, will use this Multi-Jurisdictional Hazard Mitigation Plan in conjunction with the EMP to implement strategies, projects, and policies which lead to a more resilient and safe County.

4.2.1.2 Santa Barbara County Fire Department

Mission Statement	The Santa Barbara County Fire Department serves and safeguards the community from the impacts of fires, medical emergencies, environmental emergencies, and natural disasters through leadership, planning, education, prevention, code enforcement, and all-hazard emergency response.
Vision Statement	The Santa Barbara County Fire Department will be a model public safety agency, widely recognized for our effectiveness, regional strength, and community attentiveness.
Core Values	Commitment – Courage - Integrity - Innovation - Teamwork - Service

The Fire Department is responsible for the following activities:

- Fire Suppression
- Defensible Space Program
    - Enforcing Public Resource Code 4291 defensible space
- Enforcing Development Standards
- Updating and implementing the Santa Barbara County Fire Unit Strategic Fire Plan (meeting the California Strategic Fire Plan and National Fire Plan Standards)
    - Santa Barbara County is one of six "contact counties" (Santa Barbara, Ventura, Los Angeles, Orange, Kern, and Marin), which has executed a contract with the State of California to provide wildland fire protection on state responsibility areas (SRA). Santa Barbara County has the responsibility as a contract county to implement the 2010 State Strategic Fire Plan for California in Santa Barbara County. As such the Santa Barbara County Fire Department functionally operates as a Unit of the California Department of Forestry and Fire Protection (CAL FIRE) and is responsible for all Strategic Fire Plan activities within the County.
- Assisting Planning and Development (and other Departments) with Development Standards for High Fire Hazard Areas
- Conducting Community Outreach and Public Education Programs
- Providing assistance and oversight of Community Wildfire Protection Plans (CWPP) throughout Santa Barbara County.
- Conducting prescribed burns and vegetation management projects
- Monitoring "fire weather" and maintaining and utilizing "Red Flag Alert" signs as part of the "Red Flag Warning Plan" to alert citizens of dangerous fire weather conditions
- Burn Permit Program (agriculture and hazard reduction burning to reduce hazardous accumulations of fuels)
- Support the Community Emergency Response Teams (CERT) program

Many of these policies and development standards are designed to reduce the risk to wildfire damage. They provide a foundation for implementing the identified wildfire mitigation strategies within this Multi-Jurisdictional Hazard Mitigation Plan. Through participation in the Mitigation Advisory Committee, the

County Fire Department will use this foundation to help implement the identified wildfire mitigation strategies as resources are available.

4.2.1.3 Santa Barbara County General Services Department

The mission of the General Services Department is to provide a full range of services, guidance, and expertise that enables County government to deliver public services effectively.

Administrative & Financial Support	Financial Services, Risk Management, Purchasing, Back to Work Program
Support Services	Real Property, Facilities Management, Capital Projects, Vehicle Operations
Information Technology Services	Computer Services, Communications, Imaging and Copying Services and Government Access TV

General Services delivers an array of support services to County departments and prides itself on excellent customer service. Services provided by General Services include:

- **Capital Improvements** provides full service planning, design, and construction of new County facilities, including remodels and related projects for County departments. The Office of the County Architect provides services related to space planning and utilization in addition to management of historical projects.

- **Facility Management** (including Energy Management) promotes a safe and healthy environment for County employees and visitors. It provides a full range of maintenance services and coordinates contracts for custodial and landscaping services for County-owned structures. Facilities also include county-wide Energy Management efforts to improve the efficiency of the County's facilities and reduce our utilities.

- **Finance and Administration** supports the department mission by delivering successful Budgeting and Finances, Human Resources, county-wide utility processing and Information Technology support.

- **Information Technology** enables County departments to provide effective services to citizens through innovative technology solutions. The Division delivers reliable information technology, telephone, and public safety radio network systems. Services include: Windows infrastructure and email services, web hosting and network security systems. These services are used by Santa Barbara County employees and partners.

- **Public Safety Radio Communications** provides portable and mobile microwave radio communications across the County's diverse terrain supporting Fire, Sheriff, Probation, EMS and General Government communications in conjunction with our partner agencies.

- **Purchasing, Mail Service & Surplus Property** provides procurement services for County departments and encourages partnerships with local vendors on services and consumable commodities. This team also provides inter-office and US mail delivery, and movement of equipment, furniture and disposition of surplus property.

- **Real Estate Services Real Property** provides professional real estate services to meet the needs of the County by preparing and negotiating real property transactions including leases, sales, and acquisitions.

- **Vehicle Operations** meets all of the transportation needs of the County by procuring, maintaining and disposing of all light, medium and heavy duty vehicles and equipment, administration of the motor pool, and the fuel station operations.

The Department of General Services plays a key role in hazard mitigation, county-wide emergency preparedness and support of an emergency response or threat. Each functional area represented above is an active member of the County Logistics Team, playing a key role in support of an incident, as well as continuing to deliver a continuity of mission critical County Services during an event. Facilities, Procurement, Transportation, Communication, Information Technology and Resources are core functions in the mitigation of natural and man-caused hazards. As we procure, design, remodel, operate and maintain County facilities and infrastructure, physical or virtual, we attempt to reduce potential hazards and strive for a high level of preparedness and resilience.

4.2.1.4 Santa Barbara County Planning and Development Department

Planning & Development plans for and promotes reasonable, productive and safe, and sustainable use of the land to foster economic, social, cultural and environmental prosperity across Santa Barbara County. It provides quality planning, permitting and inspection services through thoughtful, collaborative and professional process under the policy direction of the Board of Supervisors and the Planning Commission.

It is responsible for the creation, update and implementation of the County Comprehensive Plan, including the Seismic Safety and Safety Element. The divisions of the Planning and Development Department that have a role in mitigation include:

4.2.1.4.1 Development Review

This division reviews development projects for permit decisions by staff, the Zoning Administrator, the Planning Commission, or the Board of Supervisors based on policies in the Comprehensive Plan, state law and local ordinances. It also ensures compliance with environmental impact mitigation measures and conditions of approval.

4.2.1.4.2 Long Range Planning

The mission of the Long Range Planning Division is to research, analyze, develop, and communicate land use policies that meet Federal and State mandates in a manner that fosters economic, social, cultural, and environmental prosperity across the county. The work of this division is organized according to the following subject areas: Required Services and Operations, Comprehensive Plan Amendments, Community Plan Amendments, and Special Projects.

4.2.1.4.3 Building and Safety

The primary function of this division is to provide property and permitting information to the public. The Division processes ministerial permits, reviews and approves ministerial zoning permits, enforces the County's ordinances, performs plan reviews and inspects construction projects for compliance with building codes. It is also responsible for reviewing plans and inspecting grading for code compliance. Additionally, the Division conducts housing inspections; issues film permits and provides safety reviews on oil operations for the Energy Division.

4.2.1.4.4 Energy and Minerals

This division develops the policy recommendation, administers mitigation programs, processes permit applications and assures permit compliance for oil and gas and other energy development and transportation projects within the County. The Energy Division focuses on offshore projects and their related onshore facilities. It is also responsible for enforcing the Petroleum Ordinance for onshore oil operations.

4.2.1.4.5 Agricultural Planning

The Agricultural Planning Division supports the review of development projects and long range planning projects by providing input and technical expertise related to agricultural resources to mitigate the effects of natural, technological and human-caused hazards.

The Planning and Development Department plays an instrumental role in the Mitigation Advisory Committee ensuring this Multi-Jurisdictional Hazard Mitigation Plan is consistent with other long term and comprehensive planning efforts throughout the County. The Planning and Development Department identifies development policies already in place which help reduce future damage to structures from natural hazards and would play a crucial role in creating new development policies as necessary to implement the identified mitigation strategies.

4.2.1.5 Santa Barbara County Community Services Department

The divisions of the Community Services Department that have a role in mitigation include:

4.2.1.5.1 Parks Division

The Parks Department maintains more than 900 acres of parks and open spaces, 84 miles of trails and coastal access easements, and the grounds surrounding county buildings. Park rangers or hosts reside in every major park to provide public assistance and supervise the grounds, enjoyed by over 6 million people annually. As pertains to natural hazard mitigation, the Park Department's role includes facility and infrastructure protection, hazard prevention, and public safety on Park lands.

4.2.1.5.2 Santa Barbara County Housing & Community Development Division

The mission of the Housing and Community Development Department (HCD), working in cooperation with county citizens, cities, governmental entities, commercial interest and other valuable county stakeholders, is to:

- Coordinate the development and implementation of regional strategic housing and community development processes that respect local needs, priorities and our natural environment, that lead to the development of healthy and viable neighborhoods and an improved quality of life for all in our region.
- Lead this community building effort by developing partnerships to create a full spectrum of housing; building creative strategies for economic vitality; promoting advocacy & educational activities on healthy growth and well-designed development initiatives.

These two mission areas for the Housing & Community Development Division are closely linked to mitigation in that the department wants to ensure the development it promotes is safely constructed and well sited with regard to risk of the identified natural hazards.

4.2.1.6 Santa Barbara County Agricultural Commissioner's Office

Regulates pesticide use by commercial agriculture and regulates the movement of plant material to ensure compliance with local, state, federal, and foreign regulations. During disasters, this office gathers and compiles crop loss data to determine eligibility for Disaster Declarations and associated aid.

Since agricultural pests and diseases was identified as a hazard of concern during the 2011 update of this Local Hazard Mitigation Plan, the Agricultural Commissioner's Office within the County Park Department will continue to play a critical role with the Mitigation Advisory Committee to reduce risk to agricultural production from future pests and diseases.

4.2.1.7 Santa Barbara County Department of Public Works

The County of Santa Barbara, Public Works Department is comprised of five (5) divisions and each division performs functions that are directly related to hazard mitigation.

4.2.1.7.1 Administration

Within the administration division is housed the Office of the Disaster Recovery Manager (DRM). This position is responsible for coordinating the Public Works response in a post-disaster environment to ensure that federal and state disaster relief programs are handled efficiently and to the maximum benefit of the residents of Santa Barbara County. Additionally, Public Works has an on-going Mutual Aid Plan that has been adopted by the Board of Supervisors which is managed by the DRM in which all the cities in the operational area may request disaster assistance in the form of labor, equipment and/or materials for their Public Works Department. This has been accomplished by the Cities joining the County Mutual Aid Plan by City Council Adoption which is linked into the State Wide Public Works Mutual Aid Plan which assures reimbursement eligibility from Cal OES and FEMA.

The Public Works (PW) DRM, in addition to the responsibility of managing all disasters for the Public Works Department under the Federal and State PA Program, also manages, alongside chosen representatives from PW division, the Public Works 5-Year *Capital Improvement Program*. For Public Works, this is a $584,968,000 funded and non-funded list of capital projects (<$100,000>) report that is in creation (design) to completion (construction) from all the divisions in Public Works on behalf of the Director. As these are all new or upgraded projects, the opportunity to include hazard mitigation safety measures for each project is reviewed and discussed. In some cases, a CIP project may identify HMP funding from FEMA as the main source of revenue for that project, such as seismic upgrades for facilities, or steal pile retaining wall to replace the outdated wooden solider pile walls, tire revetment retaining wall and or drainage increases at major locations that elevates flooding and/or water retention.

4.2.1.7.2 County Surveyor's Office

The mission of the office is to provide quality surveying services through the creation, maintenance and protection of land based records for public and private resources. The County Surveyor is designated in responsible charge for Land Surveying services provided by the Public Works Department. The Division has been allocated nineteen full time positions and has five general areas of responsibility. They are: 1) Checking and recording subdivision maps and documents; 2) Providing survey related data to the general public; 3) Providing record map and document research and professional land surveying advise to Public Works; 4) Conducting field surveys for County projects; 5) Administration of various State and local programs, and; 6) Providing real property services for the Department of Public Works.

4.2.1.7.3 Resource Recovery and Waste Management Division

The Resource Recovery and Waste Management Division is responsible for the cost-effective management of solid waste and utilities in the County. The Division's comprehensive program for the management of solid waste includes the collection, recycling, and disposal of solid waste, and also the abatement of illegal dumping of waste. The County maintains only one active landfill (Tajiguas).

There are four sections within the Division, each responsible for performing a unique series of functions:

1) **Collection and Materials Management Section** manages the County's resource recovery and waste diversion programs (community programs), reviews and manages long-range solid waste management plans, and oversees the County's solid waste collection franchises for regularly generated solid waste.

2) **Operations Section** manages waste processing and disposal operations at the County's transfer stations and active landfills.

3) **Engineering Section** prepares all engineering and geologic plans and documents for the County's solid waste facilities, and monitors all active and closed landfills currently or previously owned by the County to ensure ongoing compliance with the many State and Federal regulations governing the environmental safety of each facility.

4) **Utilities Section** manages and operates the Laguna Wastewater Treatment Facility serving the unincorporated area of Orcutt in North County, and provides engineering and administrative support (i.e., billing) to the County's underground utilities program and the County-administered wastewater, water and street lighting districts located throughout the unincorporated areas of the County.

In coordination with the Transportation and Water Resource Divisions of Public Works, the principal natural disaster mitigation related function of this division is debris management planning in a pre-disaster environment and debris disposal post disaster, of debris generated from Public Works infrastructure.

4.2.1.7.4 Transportation Division

The Transportation Division supports this mission through inspecting, maintaining, repairing, replacing and improving all infrastructure within the County's Road Right-of-Way. This includes roadways, bridges, culverts and drainage structures. The Transportation Division is responsible for the maintenance of approximately 900 center lane miles of roads throughout the County, or approximately 1,800 lane miles, approximately 110 bridge structures, 4200 drainage structures (including culverts and drop inlets), 65 traffic signals (including flashing beacons), thousands of signs, and striping along the majority of the County's 900 roads.

The Transportation Division ensures that these facilities are maintained through our preventative maintenance programs, capital improvement projects to replace structurally deficient structures, and constructing vital links in the County's roadway infrastructure. In addition, the Transportation Division continually inspects all infrastructures and identifies hazards likely to impact County-owned facilities.

During a hazardous or disaster event, the Transportation Division maintenance staff immediately transforms into an emergency response organization that includes the design, traffic and construction sections. A local base of operations (called a Department Operations Center (DOC) located in North and South County) is established in order to effectively coordinate personnel and resources in order to immediately respond to hot spots as they are identified by Public Works staff, local agencies and the public. The DOC becomes a base of operations and collection center for information, inspection/damage reports, and response strategies as they are developed. In addition, monitoring with County Flood Control is coordinated with Roads for public information, dispatch to the CHP and Sheriff, dispatch to their construction and maintenance staff for road warnings and closures as needed. Staff are deployed to mitigate potential Public Health and Safety hazards on the roadway system, and inspect critical structures, as well as oversee any contracted clean-up or construction crews. Transportation staff is well-rehearsed in disaster response training, having experienced declared disasters in 1993 (FEMA-979) 1995 (1044-1045), 1998 (FEMA-1203), 2001 (State Proclamation 2001-01), 2005 (FEMA-1577), 2007 (Zaca), 2008 (Gap), 2009 (Tea-Jesusita), 2010 (FEMA-1952) and 2011 (State Proclamation). During past declared disasters and other lesser events, staff performed exceptionally in quickly and thoroughly reacting to the changing conditions and requirements of emergency response. The Public Works Department and the Transportation and Flood Control Division in particular have a pre-planned routine for emergency response, to assure FEMA reimbursement by using the correct documenting and reporting techniques with pre-assigned teams responsible for inspecting critical facilities and to perform as flexible response units. All of the disaster locations are identified and numbered and called into the DOC and the EOC (if activated).

Developing proper mitigation strategies and designs to these hazards is part of the mission of this division. To accomplish our mission statement all four of the Transportation Division's sections work together. The four (4) sections are Engineering, Traffic, Construction/ Permits, and Road Maintenance. Their roles are described in further detail below:

1) **Engineering Section -** Provides engineering needs related to new construction and rehabilitation of roads in the unincorporated area of the county, as well as develops design engineering for all major and routine road maintenance projects and capital improvement projects within the road right of way, oversees preparation of construction grant applications for federal and state funding, manages bidding for major road maintenance and construction projects, coordinates permit and environmental review, and plays a major role in administering and overseeing construction work performed by private contractors, including bridge management system and storm repair and restoration.

   In response to a disaster, the Engineering Section:
   - Performs immediate inspections of critical facilities in order to determine response strategies. This includes inspections of bridge structures, rock fall protection measures, drainage facilities, and roadways.
   - Working together with the Construction and Maintenance Sections, properly trained staff survey the entirety of the County road system in an expeditious and thorough manner, and rapidly response to ensure public safety and protection of property.
   - Develops and implements mitigation strategies to avoid further damage to critical facilities, or to reduce/avoid damage during future hazard events.
   - Develops permanent designs to mitigate hazards, through construction/rehabilitation/retrofit strategies.
   - Develops short and long-term inspection programs to monitor degradation of facilities due to natural hazards, and to develop mitigation strategies to avoid severe slides or other dangerous situations before disasters occur.
   - Periodically works with County Fire and other emergency response agenciesto keep key roadways and facilities critical for fire suppression and/or resident evacuation open and accessible to emergency vehicles and resident traffic

2) **Traffic Section -** Provides transportation planning and traffic engineering for the County's unincorporated areas; prepares and reviews transportation improvement plans (TIPs), community plans, traffic impact studies, general plans and specific plans for proposed development projects; and performs operation and design functions including traffic signal repair and maintenance, striping and signage of roads, design and construction of bikeways and pedestrian facilities, traffic and turning movement counts, design of minor safety and operational improvements, computerized traffic modeling, and evaluation of requests for stop signs, parking restrictions, speed limit changes and traffic signals.

   In response to a disaster, the Traffic Section:
   - Performs inspections of critical traffic control facilities in order to determine response strategies to ensure the safety of the traveling public. This includes inspections of traffic control signals, signs, and potential electrical hazards.
   - During major natural or man-made disasters, the Traffic Section would assist emergency services agencies to determine viable alternate routes and detours in order to avoid hazardous disaster areas, emergency repair sites, and staging areas.
   - Works to quickly restore transportation access/infrastructure to avoid economic disruption and ensure public safety.

3) **Construction/Permits Section -** Inspects the construction for all projects that are constructed within the road right of way. These projects include: road rehabilitation, preventative road maintenance, and capital improvement projects. In addition, they verify all County road rights-of-way prior to the start

of any road encroachment operations or activity by individuals, corporations, utilities, cites and other governmental agencies; issues permits for construction activity within, under or over the County right-of-way; and performs final review and inspections to ensure that construction activity meets federal, state and county standards.

In response to a disaster, the Construction Section:

- Performs inspections of infrastructure and facilities in order to determine response strategies. This includes inspections of bridge structures, rock fall protection measures, drainage facilities, and roadways. Working together with the Engineering and Maintenance Sections, this allows for properly trained staff to survey the entirety of the County in an expeditious and thorough manner.
- Develops and implements mitigation strategies to avoid further damage to critical facilities, or to reduce/avoid damage during future hazard events.
- Perform inspections of emergency repairs, direct construction crews during emergency construction and cleanup operations.

4) **Road Maintenance Section -** Provides major and routine maintenance of the County's road system and management of 13 different County road maintenance programs, including surface treatment, roadway and bike path surface maintenance, street tree maintenance and sidewalk surface grinding, roadway slope repair, weed and brush removal, traffic control maintenance/safety assessment, and culvert maintenance; cooperates with other public agencies and with private parties to promote the safe use of the county's roadways; and oversees private contractors which may be involved in major road maintenance projects.

In response to a disaster, the Maintenance Section:

- Performs inspections of infrastructure and facilities in order to determine response strategies. This includes inspections of bridge structures, rock fall protection measures, drainage facilities, and roadways. Working together with the Engineering and Maintenance Sections, this allows for properly trained staff to survey the entirety of the County in an expeditious and thorough manner
- Maintenance crews perform emergency repairs to critical facilities, and clear roadways of debris and water, in order to restore access to the public and County staff.
- Oversee contractors performing emergency repairs and clean-up operations.

On an annual basis, the Maintenance Section:

- Performs annual culvert inspection program
    - This has been instrumental in the creation of the Culvert Inventory Project, which has worked to determine the condition of all culverts within the maintenance system and prioritize which culverts are in need of repairs or replacement.
- Performs annual roadway inspection program to monitor slipping, cracking, etc. to formulate maintenance projects to prevent slides, and washouts of roadway and accompanying infrastructure.
- Periodically works with County Fire and other emergency response agencies to keep key roadways and facilities critical for fire suppression open and accessible to emergency vehicles and resident traffic.
- Implements fire abatement program along roadways, involving vegetation control to avoid fires and to provide a wider break in the event of a wildfire.

4.2.1.7.5 Water Resources Division

The Water Resources Division is comprised of office and technical staff and the Flood Control District includes field maintenance shops in Santa Barbara, Lompoc, and Santa Maria. It maintains hundreds of miles of creeks, channels and rivers, including 26 miles of levees in Santa Maria Valley. Office staff includes engineering, environmental, hydrology and administrative services.

The Flood Control and Water Conservation District, within the Water Resources Division implements programs and projects designed to provide protection for the public and to private property against flood risks and hazards. The most significant programs are the National Flood Insurance Program (NFIP) and the County's Floodplain Management Program. Capital improvement and ongoing maintenance projects are designed to reduce flood risks and enhance the environment by providing protection for property and minimizing flood hazards.

Construction of flood control and drainage system facilities has been taking place throughout the county since the District was formed in 1955. The District maintains an extensive amount of storm drains, channels, dams and debris basins and sediment basins.

<u>Urban Drainage</u>
The Flood Control District has constructed numerous underground storm drain pipe systems in urbanized areas that service a regional benefit. These systems carry the water safely to a major channel or the Pacific Ocean. Maintaining the underground storm drain pipe system in operation and repairing or replacing worn or damaged facilities is a major ongoing obligation.

<u>Major Channels</u>
Over two hundred miles of major channels carry peak flood runoff from the hills and upland areas safely through the developed communities in the valley and coastal plain. They also provide an outlet for the extensive urban drainage system extending throughout urbanized areas. Wherever possible, the District encourages the preservation of natural creek channels as open space green belts. These generally require more maintenance than modified channels. Maintenance and repair of the channels is a major ongoing obligation.

<u>Flood Control</u>
The District's dams and retarding basins are used for flood control, debris control, and water conservation. These dams require continual maintenance to assure the structural stability of the dams and the operational readiness of its mechanical equipment.

The Public Works Department and its various divisions within are responsible for the construction/physical aspects of implementing structural mitigation projects throughout the County. Mitigation measures minimize the damage to the infrastructure in the event of a natural or man-made disaster. Some examples of where mitigation measures could be implemented is retrofitting bridge structures, placing cable mesh netting on slopes that are prone to rock falls, constructing retaining walls on slopes that are prone to slides, lengthening and raising bridges to reduce the flooding impacts, and installing scour mitigation at bridges that have been identified as scour critical by Caltrans.

4.2.2 Relevant Governance

There are many plans, programs, codes, and policies that help govern the County of Santa Barbara. The purpose of this section is to present pertinent plans, programs, codes, and policies which support risk education and reduction and/or help to implement mitigation measures. It is important to note that during the LHMP update planning process these plans, programs, codes, and policies were evaluated to determine their effectiveness in risk education and reduction efforts, as well as, its usefulness to implement mitigation measures. Any shortfalls or areas where the plans, programs, codes, and policies could be improved or expanded were identified and captured under annual review, the annual planning process and Mitigation Actions chapter of this plan.. If no mitigation actions were identified, then it can be assumed that the planning team determined that no shortfalls or areas for improvement are needed. Additionally, information gleaned through the Santa Barbara County *Multi-Jurisdictional Hazard Mitigation Plan* update process will be used in the plans, programs, codes, and policies update process. Below is a summary of the more significant relevant plans, programs, codes, and policies:

4.2.2.1 Plans

<u>Comprehensive Plan</u>

The Plan is a “comprehensive, long-term general plan” for the development of Santa Barbara County. The Comprehensive Plan focuses on the elements, land use, circulation, and environmental resource management. The Comprehensive Plan also includes a Hazardous Waste Element and a Hazardous Facilities/Materials Supplement. The Comprehensive Plan has several components specific to hazards and mitigation. The Comprehensive Plan identifies procedures for protecting watersheds such as installing debris basins and silt traps at development sites to remove sediment from runoff, planting temporary vegetation to thwart erosion, and providing adequate storm water conveyance.

<u>SEMS Emergency Management Plan</u>

The Santa Barbara County Office of Emergency Management (OEM) developed the Emergency Management Plan (EMP) in June 2003, and updated it in 2013, in order to ensure life and property safety, security, and protection of, as well as assuring the overall well-being of the population during a disaster. The EMP was developed for the Santa Barbara Operational Area as part of the California Standardized Emergency Management System (SEMS). The EMP addresses emergency responses associated with natural disasters, technological incidents, and national-security emergencies- including both peacetime and wartime nuclear defense operations. The EMP assigns tasks and specifies policies and standard operating procedures for coordination of emergency staff, resources, and service elements within the County. The Plan states that hazard mitigation is a year round effort and encourages all communities to prepare hazard mitigation plans. The following activities were identified by the Plan as potential mitigation activities: improving structures and facilities at risk, identifying hazard-prone areas and developing standards for prohibited or restricted use, recovery and relief from loss (i.e., insurance), and providing hazard warning and protecting the population.

<u>Tsunami Plan</u>

Santa Barbara County has a countywide Tsunami Plan that covers emergency response actions associated with tsunami events. Santa Barbara County OEM receives advisory messages and warnings through an emergency services microwave/computer communications network from Coast and Geodetic Survey Stations. If a seismic wave or tidal disturbance has been observed, the main system at the Honolulu Observatory will transmit warnings to satellite stations including the time of occurrence of the disturbance, the location, verification of tsunami generation, and expected arrival times at various points along the Pacific coast.

Dam Plan
The Dam Plan for Santa Barbara County contains general information, maps of potential inundation area, and proposed evacuation routes for dams.

Capital Improvement Plan
The CIP is a compilation of projects intended to implement various plans including community plans, facilities plans, and the County Comprehensive (General) Plan. Projects in the CIP quantify current and future capital needs. Accordingly, it includes projects for new and improved roads and bridges, County buildings and clinics, parks and other facilities. Because the CIP includes estimates of all capital needs, it provides the basis for setting priorities, reviewing schedules, developing funding policy for proposed improvements, monitoring and evaluating the progress of capital projects, and informing the public of projected capital improvements and unfunded needs.

4.2.2.2 Programs

National Flood Insurance Program
Santa Barbara County is an active member of the National Flood Insurance Program (NFIP). The program is administered by the County Public Works-Flood Control District. As stated by FEMA, "The NFIP aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of general risk insurance, but also of flood insurance, specifically.

As part of the NFIP are the FEMA Flood Insurance Rates Maps (FIRMs) which identify areas in the County which are vulnerable to flooding. The flood zones identified on the FIRMs are areas susceptible to 100-year and 500-year flood events. A 100-year and 500-year storm event is when storms have a 1% or 0.2% annual chance of occurrence. Another measure of the probability of occurrence of a 100-year storm is there is at least a 26% chance of a 100-year storm during the life of a 30-year mortgage. An estimated 2,194 structures are located within these 100-year floodplain areas.

The information in the Flood Insurance Study and resultant FIRMs is based on historic, meteorological, hydrologic, hydraulic and topographic data, as well as open-space conditions, flood control works, and development within the study area. Other information included on the maps includes Special Flood Hazard Areas (SFHA), Base Flood Elevations, and insurance risk zones. FIRMs are used to determine the BFE at specific sites or if a specific property is located in a floodplain or SFHA in order to administer floodplain management regulations, determine potential locations for new development, and make flood insurance determinations. The FIRMs were last updated in December 2012 and made available in GIS format as Digital Flood Insurance Rate Maps.

Another aspect if the NFIP is the Repetitive Loss (RL) Properties program. Repetitive loss properties are defined as property that is insured under the NFIP that has filed two or more claims in excess of $1,000 each within any consecutive 10-year period since 1978.

The County also participates in the Community Rating System (CRS). The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS:

1. Reduce flood damage to insurable property;
2. Strengthen and support the insurance aspects of the NFIP, and
3. Encourage a comprehensive approach to floodplain management.

Floodplain Management Program

The objective of the Floodplain Management Program is to minimize future flood hazards, created in developing areas subject to flooding, and to reduce the necessity of constructing expensive flood control facilities in the future. Benefits derived from this program include the prevention of losses in flood-prone areas and reduced need for public emergency response during storm activity. Activities associated with the Floodplain Management Program include reviewing new development permit applications for elevation above the 100-year flood level, proper setback from watercourses, and adequate drainage plans. The County's Floodplain Management Ordinance exceeds the minimum requirements for participation in the National Flood Insurance Program (NFIP).

This program also reviews development permit applications for structure elevation above the base flood elevation (BFE). The intent is to certify that the lowest floor of any building in a special flood hazard area (SFHA) is elevated above the BFE before final approval for floodplain construction can be obtained. FEMA Elevation Certificates are required.

Defensible Space Program

Establishing defensible space around structures is one of the most powerful tools for preventing fire hazards and is therefore required by both County regulations and State law. The California Fire Code Chapter 49 as amended by the County of Santa Barbara through Chapter 15 of the County Code defines defensible space as:

> *"The area surrounding a structure or building where basic wildfire protection practices are implemented, providing the key point of defense from an approaching wildfire or escaping structure fire. The area is characterized by the establishment and maintenance of fuel modification measures."*

Routine Maintenance Program

As part of the District's Floodplain Management Program, it conducts routine creek maintenance. It has been doing so since 1992. The Routine Maintenance Program occurs annually and each year the District prepares an Annual Routine Maintenance Plan, conducting public workshops and California Environmental Quality Act (CEQA) reviews of planned maintenance projects. The Annual Routine Maintenance Plan includes a description of the need for maintenance work, the work to be performed, the presence of sensitive biological resources, impacts of the activities on biological resources, standard maintenance practices to reduce impacts, and restoration measures. The Routine Maintenance Program focuses on urbanized areas or developed agricultural areas. The main objective of the program is to reduce flood hazard and damage to life, public property, and infrastructure by maintaining the conveyance capacity of key channels in the County. All routine maintenance activities are conducted in a manner that minimizes environmental impacts. Maintenance activities are completed prior to the winter. The Routine Maintenance Program includes selective brushing, de-silting, channel shaping, bank stabilization, bank protection, herbicide spraying, and channel clearing activities in most creeks and streams throughout the County. These activities can be applied individually or in combination to address the specific requirements of the affected drainage. The Routine Maintenance Program also addresses the maintenance and repair of concrete lined channels. The individual flood zones fund the Routine Maintenance Program and the extent and frequency of channel maintenance is dependent upon the availability of funds.

Operation and Maintenance Program

The Operation and Maintenance Program is one of the District's highest priority programs, and includes normal operation of the District's dams, channels and other flood protection facilities, and the routine and emergency maintenance and repair of these facilities. The District maintains channels, debris basins, dams, and storm drain facilities to prevent flooding.

Dam Safety Program

The District is responsible for being compliant with the State's Dam Safety Program. The District is exposed to a substantial potential liability because of the catastrophic losses that could occur in the event of a dam failure. The objective of the program is to assure the continuing safety of dams in their flood control and water conservation functions.

Debris Control Program

The District operates and maintains 39 debris basins, which constitute the primary debris control system within the District. Flood runoff from the hillsides, particularly from those hillsides recently denuded by fires, slides or developments, is heavily laden with rock, sand, silt, mud, and debris. The dams and debris basins restrain the rock, sand, silt, mud and debris that would otherwise clog and damage channels, which could result in flooding of adjacent property and downstream floodplains.

The objectives of the Debris Control Program include the prevention of debris flow; the planning and construction of adequate debris control facilities; the routine, scheduled clearance and disposal of debris from basins and dams; and the overall management of debris flow through channels.

There are 16 debris basins on the South Coast and the operation and maintenance procedures for these are described in the Debris Maintenance Plan, which is considered an element of the overall Maintenance Program.

Basin maintenance is conducted on an as-needed basis to ensure the proper functioning of the basin prior to each winter. Basins are inspected during the winter after significant rain events. Routine maintenance includes keeping the outlet works clear of vegetation, and maintenance of a 15-foot wide pilot channel through the center of the basin. Long-term maintenance of the basins involves the removal of sediment once the design capacity has been reduced by 25 percent (or when there is a significant wildfire in the basin's watershed.).

Storm Rehabilitation Program

The Storm Rehabilitation Program provides for post-storm rehabilitation of flood control facilities damaged in any storm disaster. The objective of the program is to prevent future hazard to life and property by returning the flood control system back to its intended function. Activities included in the Storm Rehabilitation Program include removing debris from access roads, reservoirs, debris basins, and reconstruction and repair as necessary.

The objectives of the District through the Storm Rehabilitation Program are to:

1. Assess condition of facilities quickly and completely in regards to public safety;
2. Allocate District resources on a priority basis to emergency work and permanent work;
3. Maximize efforts to receive State and Federal funding, when possible;
4. Complete emergency work quickly to provide for the public safety and to prevent further damage and complete permanent work in a timely manner to return damaged infrastructure to its intended function; and Contact and request assistance from other agencies, when necessary.

Current Santa Ynez River Programs
The following subsections describe current activities performed by the District along the Santa Ynez River.

Santa Ynez Maintenance Program
As part of the Lower Santa Ynez River Maintenance Project, the District has periodically cleared portions of the lower Santa Ynez River that is prone to flooding. The maintenance project defined in 2001 was a 4.5-mile reach extending from the Lompoc Wastewater Treatment Plant to the 13th Street Bridge on Vandenberg Air Force Base; however the project no longer includes Vandenberg Air Force property.

The objective of the Lower Santa Ynez River Maintenance Project is to maintain a 100-foot wide swath along the project reach with non-obstructive vegetation in order to allow sufficient channel capacity for certain flood flows. Maintenance is performed on the Lower Santa Ynez River as needed. The Santa Ynez Maintenance Program evaluated annually.

Santa Ynez River Flood Warning System
The Santa Ynez Rive Flood Flow Model (SYRFFM) was developed by the SBCFCD, and predicts flood-flows in the Santa Ynez River in Santa Barbara and Ventura Counties. The model encompasses approximately 1253 square miles of drainage area from the Santa Ynez headwaters above Gibraltar Reservoir to Vandenberg Village, just upstream from the river's outlet to the Pacific Ocean.

The program input is both for forecast and actual precipitation, plus various parameters for estimating losses, runoff, and reservoir operation. The output is hourly flow in cubic-feet-per-second (cfs) at 20 locations along the Santa Ynez River, and hourly operational data for Gibraltar and Cachuma Reservoirs.

Typical model results show the predicted water flow behavior of the Santa Ynez River, water level and inflow predictions for Cachuma dam operations, and downstream dam water release predictions within the river system.

Closely coordinated communications with USBR (and other) during Cachuma Dam modeling operations typically results in hourly SYRFF Models being generated by County FCD personnel-and disseminated by email to individuals involved with Cachuma Reservoir and Santa Ynez River operations.

4.2.2.3 Codes

County Building Codes
Under the County's Planning and Development Department, the Building & Safety Division's primary function is to provide reasonable controls and regulations that protect the citizenry and establish effective safeguards for the life, health, and property equally throughout the unincorporated areas of Santa Barbara County. This is achieved through the application of uniform codes and standards that involve design, materials, construction, use, and occupancy of all buildings constructed within our

jurisdiction. Building & Safety staff strive to implement these standards in a fair and consistent manner while encouraging an open communication process with the public they serve.

Fire Hazard Severity Zoning
Hazard severity zone maps are available through Cal Fire FRAP website, Santa Barbara County Fire, and County Planning and Development: http://frap.fire.ca.gov/projects/hazard/fhz.html

4.2.2.4 Policies

Emergency Storm Response
During flood events, the District staff transforms into an emergency response organization. District staff work around-the-clock and are deployed to flood-fighting and support activities. Staff from the District office performs a variety of emergency tasks such as answering phone calls, storm monitoring, radio dispatching, field patrolling, and computer modeling for flood flow forecasting. Emergency operations also include pre-planned routines such as the monitoring of all flood facilities and equipment; the operation of dams and channel gates; and the provision of logistics support, field operations headquarters and responses to emergency situations.

ALERT Flood warning system
The District maintains and operates a comprehensive automated ALERT (Automated Local Evaluation in Real Time) storm monitoring system consisting of rain gauges, weather sensors, stream flow gauges, and reservoir level and gate opening gauges.

The automated storm monitoring system consists of 91 County-wide real-time transmitting gauge installations (60 ALERT rain gauges, 15 ALERT stream-flow gauges, 10 ALERT Weather stations, and 6 ALERT Reservoir gauge sites).

Once a predefined significant change in any of the parameters has occurred a transmission is sent from the sensor to the base station located at the District Office. The data is used in conjunction with computer models to determine the location and timing of potential flooding. District staff coordinates with the National Weather Service (NWS) and other emergency services to advise the public and reduce the damages to life and property from flooding. In addition, the ALERT network has been instrumental in guiding reservoir operations to maximize both flood control and water supply benefits.

The Flood warning system also has the capability to issue automated (cell phone and email) text messages in the even that established (rain/stream/reservoir) thresholds have been exceeded. This valuable warning system enables District personnel to be immediately informed of potential flood risk information-that may result in more timely and detailed field observations, coordinated agency action plans, and filed remediation action.

Flood Zone Development
The Comprehensive Plan establishes flood hazard area policies that regulate development within the 100-year floodplain. The plan also establishes location specific measures for flood control facilities, such as for the Lompoc area in which flood control measures include provisions to recharge water basins with water runoff. According to the Environmental Resource Management Element of the Comprehensive Plan, policies on development of lands subject to environmental constraints are identified by four categories; Categories A, B, C, and D. The categories and their application to floodplain management are described in **Error!**

Reference source not found. It should also be noted that the Seismic Safety and Safety Element in the Comprehensive Plan also minimizes impacts from geologic and fire hazards.

Table 4.1 Flood Policies in Comprehensive Plan

Category	Floodplain Development Policy
A	Urbanization should be prohibited in these areas; • Stream channels with flood hazard or recharging groundwater. • Floodway areas.
B	Urbanization should be prohibited in these areas, except in a relatively few special instances; • 100-year floodplains (except west of the City of Lompoc).
C	Urbanization could be permitted in these areas only in appropriate instances, subject to plan review and imposition of specific conditions to protect against hazards and to preserve the integrity of the land and environment: • Areas subject to inundation by tsunamis. • Areas of unknown flood hazard.
D	Urbanization should be permitted these areas. There are no concerns regarding floodplains with lands in this category.

<u>Defensible Space</u>
In 2005, the State Board of Forestry adopted provisions now identified in Public Resource Code 4291 that requires all structures on State Responsibility Area (SRA) lands to maintain 100 feet of defensible space clearance from all structures. Within the County of Santa Barbara, 100 feet defensible space is also enforced on unincorporated Local Responsibility Area (LRA) in the Santa Barbara County Fire Protection District. The 100-foot defensible space clearance is a minimum, and in some instances this distance may need to be increased due to the location of a structure on a slope or because of the vegetative fuel loading surrounding a structure. Beyond Defensible Space, the Fire Department has developed seven standards for residential and commercial development. These standards are identified in **Table 4.2.**

Table 4.2 Santa Barbara County Fire Development Standards 1-7

Santa Barbara County Fire Department Development Standards	
Development Standard #1 Private Roadway and Driveway Standards	Establishes minimum standards for driveways and private roads. These standards outline minimum road widths and vegetation clearance designed to provide fire vehicles access to residences and associated structures.
Development Standard #2 Fire Hydrant Spacing and Water Flow Rates	Establishes fire hydrant spacing, discharge outlet configuration and flow rate requirements. Flow rate standards are used when calculating peak load water supply requirements for one-and-two family dwelling units.

Development Standard #3 Stored Water Fire Protection Systems Serving One and Two-Family Dwellings	Establishes standards for stored water fire protection systems serving one and two-family dwellings.
Development Standard #4 Automatic Fire Sprinkler System Standards	Establishes standards for automatic fire sprinkler systems.
Development Standard #5 Automatic Alarm System Standards	Establishes standards for automatic alarm systems.
Development Standard #6 Vegetation Management Plan	Establishes standards for vegetation management plans.
Development Standard #7 Access Gates	Establishes standards for gates on private roads and private driveway access points.

4.2.3 Summary of Capabilities

The departments, plans, programs, and policies addressed above provide an overview of the County's activities related to natural disaster mitigation. **Table 4.** provides a general analysis of administrative and technical capabilities within the County's departments.

Table 4.3 County of Santa Barbara: Administrative and Technical Capacity

Staff/Personnel Resources	Y/N	Department/Agency and Position
A. Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	Planning and Development; Public Works
B. Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Planning and Development; Public Works; County Fire
C. Planners or Engineer(s) with an understanding of natural and/or manmade hazards	Y	Planning and Development; Public Works;
D. Floodplain Manager	Y	Public Works, Flood Control District
E. Surveyors	Y	Public Works, County Surveyor's Office (GIS also)
F. Staff with education or expertise to assess the community's vulnerability to hazards	Y	Public Works, County Fire; OEM
G. Personnel skilled in GIS and/or HAZUS	Y	Assessors Office, Public Works - County Surveyor's Office, Planning & Development; OEM
H. Scientists familiar with the hazards of the County	Y	DPW, P&D
I. Emergency Manager	Y	OEM
J. Grant writers	Y	Departments determine their own level of service. (Disaster Recovery Manager with Public Works is lead for most disaster related grants.)

*The legal and regulatory capabilities of the County are shown in the Santa Barbara County Code of Ordinances

Table 4.4 Presents the existing ordinances and codes that affect the physical or built environment of the County. Examples of legal and/or regulatory capabilities can include: the County's building codes, zoning ordinances, subdivision ordinances, special purpose ordinances, growth management ordinances, site plan review, general plans, capital improvement plans, economic development plans, emergency response plans, and real estate disclosure plans.

Table 4.4 County of Santa Barbara: Legal and Regulatory Capability

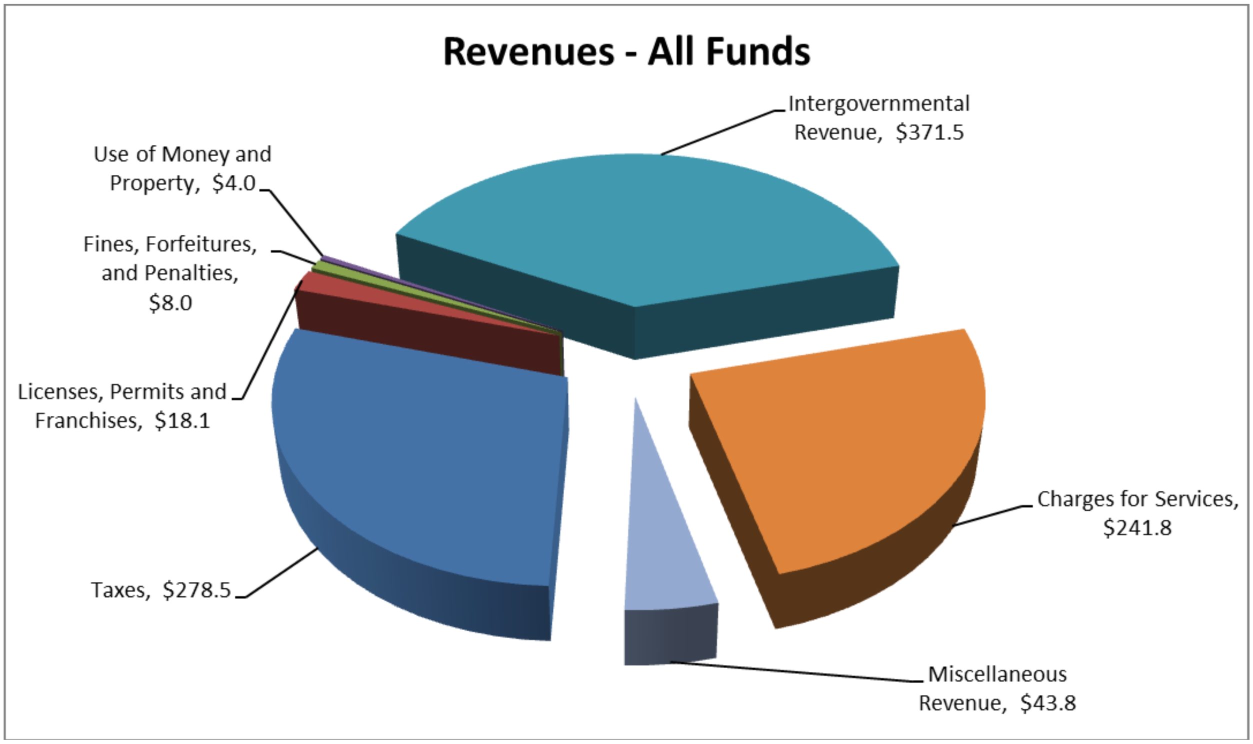
Regulatory Tools (ordinances, codes, plans)	Local Authority (Y/N)	State Prohibition (Y/N)
A. Building code	Y	N
B. Zoning ordinance	Y	N
C. Subdivision ordinance or regulations	Y	N
D. Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	N
E. Growth management ordinances (also called "smart growth" or anti-sprawl programs)	Y	N
F. Site plan review requirements	Y	N
G. General or comprehensive plan	Y	N
H. A capital improvements plan	Y	N
I. An economic development plan	Y	N
J. Emergency response plan (s)	Y	N
K. A post-disaster recovery plan	Y	N
L. Real estate disclosure requirements	Y	N

4.3 Fiscal Resources

This section presents a review of the County's fiscal capabilities that may be applicable to providing financial resources to implement identified mitigation action items.

The County budget for Fiscal Years 2015-16 and 2016-17 presents a balanced budget, with FY 2015-16 Operating Revenues of $965.6 million (see **Table 4.5** below) and Operating Expenditures of $965.1 million resulting in an operating surplus of $0.5 million. The Recommended Operating Revenues exceed Recommended Operating Expenditures and is demonstrating a solid foundation for the future. Improving revenues, up $49.2 million (5.3%), and measured expenditure growth, $44.2 million (4.7%), have helped to develop a balanced Recommended Budget.

Table 4.5 Operating Revenue - All Funds $965.6 million (Dollars in millions)



SECTION 5 HAZARDS ASSESSMENT

5.1 OVERVIEW

The purpose of this section is to review, update, and/or validate the identified and profiled hazards in 2016 Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan (HMP). The intent is to confirm the list of hazards facing the county and determine if the current information and material is accurate. The importance of this is to ensure that all hazards are being considered and decisions are based on the most up-to-date information. Another purpose of this section is to screen the hazards. It will provide an understanding of the significance by ranking hazards by their priority in the community.

To assist with this effort two groups were utilized: the Mitigation Advisory Committee (MAC) and the Santa Barbara County Local Planning Team. The MAC group assessed information as it related to their jurisdiction, while the Local Planning Team assessed information at the county-level.

As part of process both groups leveraged other planning efforts and documents, including the State of California Multi-Hazard Mitigation Plan, the Santa Barbara County Comprehensive Plan Seismic Safety and Safety Element, and the Santa Barbara County 2016 HMP.

5.2 MITIGATION ADVISORY COMMITTEE HAZARD ASSESSMENT

Utilizing the information and material from the State of California Multi-Hazard Mitigation Plan, the Santa Barbara County Comprehensive Plan Seismic Safety and Safety Element, and the Santa Barbara County 2011 HMP; the MAC reviewed and revised 1) the list of hazards in the geographic area; 2) the information and material presented for each hazard; and 3) the prioritization of the hazards. The following sections provide a summary of the work.

5.2.1 Hazard Identification

Based on the review of the Santa Barbara County 2016 HMP, incorporating information from other documents (i.e., the California State Multi-Hazard Mitigation Plan), and utilizing local experience and knowledge. Table 5.1 lists the hazards the MAC has identified as being relevant to Santa Barbara County.

Table 5.1 Relevant Hazards in Santa Barbara County

County Hazards
Earthquake
Liquefaction
Landslides and Other Earth Movements
Expansive Soils/Land Subsidence
Wildfire
Flood
Coastal Storm Surge
Climate-Related
Sea Level Rise/Coastal Flooding and Erosion
Droughts and Water Shortage

Severe Weather and Storms
Extreme Heat
Freeze
Hailstorm
Hurricane
Tornado
Windstorm
Energy Shortage and Energy Resilience
Oil Spill
Dam Failure
Agricultural Pests and Disease
Epidemic/Pandemic/Vector Borne Disease
Hazardous Material Release
Radiological Incident
Terrorism
Cyber Threat
Aircraft Crash
Train Accident; Explosion and/or Chemical Release
Natural Gas Pipeline/Storage
Levee Failure
Tsunami
Civil Disturbance
Well Stimulation/Hydraulic Fracking

5.2.2 Hazard Screening/Prioritization

The intent of screening hazards is to help prioritize which hazard creates the greatest concern in the community. Because the original process used to rank hazards in the Santa Barbara County 2011 HMP is not being utilized, an alternative approach is being recommended. A summary of the process and the results of the revised hazard ranking for the 2016 HMP Update are discussed below:

Ranking Tool Design

The ranking tool prioritizes hazards on two (2) separate factors:

- Probability of the hazard affecting the community
- Potential impacts of the hazard on the community

To further assist with the process; the following definition of "High", "Medium", and "Low" probability and impacts were utilized. To futher assist, a numeric value was applied to the ranking scale allowing for a clear definition between priority hazards and hazards of interest.

<u>*Probability*</u>

High- Highly Likely/Likely (100 % chance will happen every year) (3 points)
Medium- Possible (75 % chance will happen every 5 years)(2 points)
Low- Unlikely (50 % chance will happen every 10 years)(1 point)

<u>*Impact*</u>

High- Catastrophic/Critical: Major loss of function, downtime, and/or evacuations (3 points)

Medium- Limited: Some loss of function, downtime, and/or evacuations (2 points)
Low- Negligible: Minimal loss of function, downtime, and/or evacuations (1 point)

Based on the revised list of hazards and utilizing the Hazard Screening/Prioritization approach, the MAC screened the hazards. The results of the assessment are in **Table 5.2**. The shading of the matrix boxes indicate the priority level: Red = tier 1 or 5-6 points; Green = tier 2 or 4 points; and Gray = tier 3 or 2-3 points.

Table 5.2 Hazard Screening and Ranking

Rank	High Impact	Medium Impact	Low Impact
High Probability		• Drought/Water Shortage • Energy Shortage • Flooding • Landslide/Other Earth Movements • Oil Spill • Sea Level Rise/Coastal Flooding • Wildfire	• Agricultural Pests/Disease • Train Accident
Medium Probability	• Earthquake	• HazMat Release • Terrorism • Severe Weather	• Commercial/Military Aircraft Crash • Cyber Threat
Low Probability	• Dam Failure • Radiological Accident	• Civil Disturbance • Levee Failure • Marine Invasive Species • Natural Gas Pipeline/Shortage • Well Stimulation/Hydraulic Fracking • Tsunami	

5.3 LOCAL PLANNING TEAM HAZARD ASSESSMENT

The Santa Barbara County Local Planning Team leveraged the work completed by the MAC since the unincorporated county makes up a large portion of the county. As part of the Local Planning Team's efforts it reviewed the information and material from the State of California Multi-Hazard Mitigation Plan; the Santa Barbara County Comprehensive Plan Seismic Safety and Safety Element; and the Santa Barbara County 2016 HMP; in addition to other documents, plans, and material provided by the Local Planning Team members. The following sections provide a summary of the work.

5.3.1 Hazard Identification

By considering information and material from the State of California Multi-Hazard Mitigation Plan; the Santa Barbara County Comprehensive Plan Seismic Safety and Safety Element; the Santa Barbara County 2016 HMP; and other documents, plans, and material provided by the local planning team members, the local planning team adopted the MAC list of hazards (*see* Table 5.1). This is further supported by the fact that the unincorporated county makes up a large portion of the county.

5.3.2 Hazard Screening/Prioritization

Because of the similarities between of the list of hazards, the local planning team determine the most prudent course of action was to review and validate the hazard screening effort completed by the MAC. After internal discussions the local planning team adopted the MAC hazard screening and rankings (*see* Table 5.2).

5.4 HAZARDS

Based on HMP update requirements and discussions with Cal OES and FEMA, it was suggested that the list of hazards be divided into Profiled Hazards and Hazards of Interest. As reflected in Table 5.2, the "*higher priority*" profiled hazards are indicated in the Red boxes and the "*lower priority*" Hazards of Interest are reflective in the Green and Grey boxes. It should be noted that mitigation actions and projects will focus on the "*higher priority*" hazards. The following sections represents work done by the MAC and confirmed by the local planning team. The information provided below is relevant to the jurisdiction. In other words, if a particular hazard is not a threat to a community it is not included in the HMP. The following material is intended to be an overview of the hazards; more information can be found in the State of California Multi-Hazard Mitigation Plan, the Santa Barbara County Comprehensive Plan Seismic Safety and Safety Element, and other documents.

5.4.1 Higher Priority Profiled Hazards

5.4.1.1 Earthquake

5.4.1.1.1 Description of Hazard

An earthquake is caused by a release of strain within or along the edge of the Earth's tectonic plates producing ground motion and shaking, surface fault rupture, and secondary hazards, such as ground failure. The severity of the motion increases with the amount of energy released, decreases with distance from the causative fault or epicenter, and is amplified by soft soils. After just a few seconds, earthquakes can cause massive damage and extensive casualties.

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as people awakening, movement of furniture, damage to chimneys, and total destruction. The scale currently used in the United States is the Modified Mercalli Intensity (MMI) Scale. It was developed in 1931 by the American seismologists Harry Wood and Frank Neumann. This scale is composed of 12 increasing levels of intensity designated by Roman numerals that range from imperceptible shaking to catastrophic destruction. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects.

Most people are familiar with the Richter scale, a method of rating earthquakes based on strength using an indirect measure of released energy (**Table 5.3**). The Richter scale is logarithmic. Each one-point increase corresponds to a 10-fold increase in the amplitude of the seismic shock waves and a 32-fold increase in energy released. For an example, an earthquake registering 7.0 on the Richter scale releases over 1,000 times more energy than an earthquake registering 5.0.

Table 5.3 Richter Scale

Richter Magnitudes	Earthquake Effects
Less than 3.5	Generally not felt, but recorded.
3.5-5.4	Often felt, but rarely causes damage.
Under 6.0	Slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	Can be destructive in areas up to about 100 kilometers across residential areas.
7.0-7.9	Can cause serious damage over larger areas.
8 or greater	Can cause serious damage in areas several hundred kilometers across.

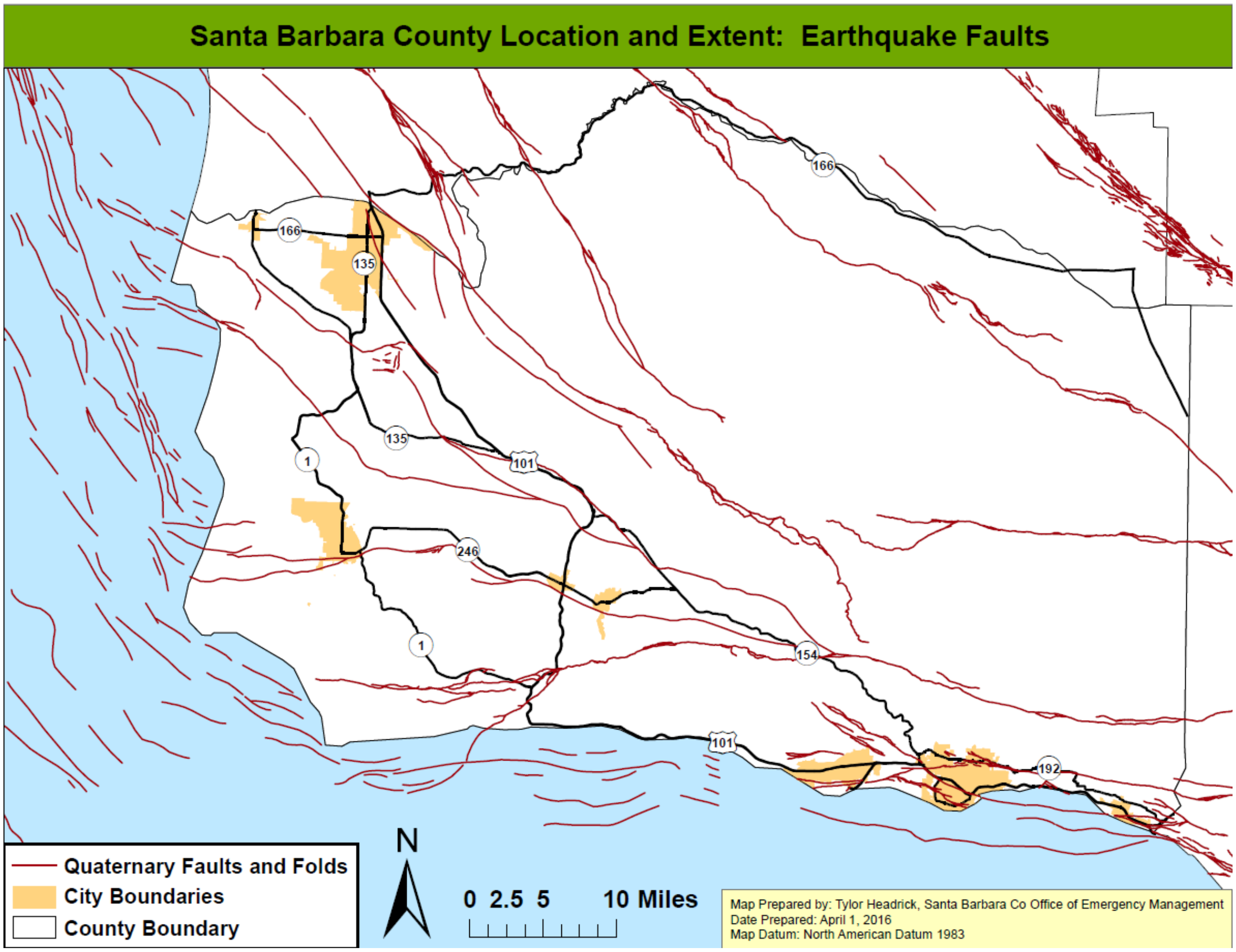
Peak ground acceleration (PGA) is a measure of the strength of ground shaking. Larger peak ground accelerations result in greater damage to structures. PGA is used to depict the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (10%, 5%, or 2%) of being exceeded in 50 years return period. These values are often used for reference in construction design, and in assessing relative hazards when making economic and safety decisions.

Liquefaction is the phenomenon that occurs when ground shaking causes loose, saturated soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: lateral spread and loss of bearing strength. Lateral spreads develop on gentle slopes and entail the sidelong movement of large masses of soil as an underlying layer liquefies. Loss of bearing strength occurs when the soil supporting structures liquefy, causing the structures to settle; resulting in damage and, in some cases, collapse.

5.4.1.1.2 Location and Extent of Hazard in Santa Barbara County

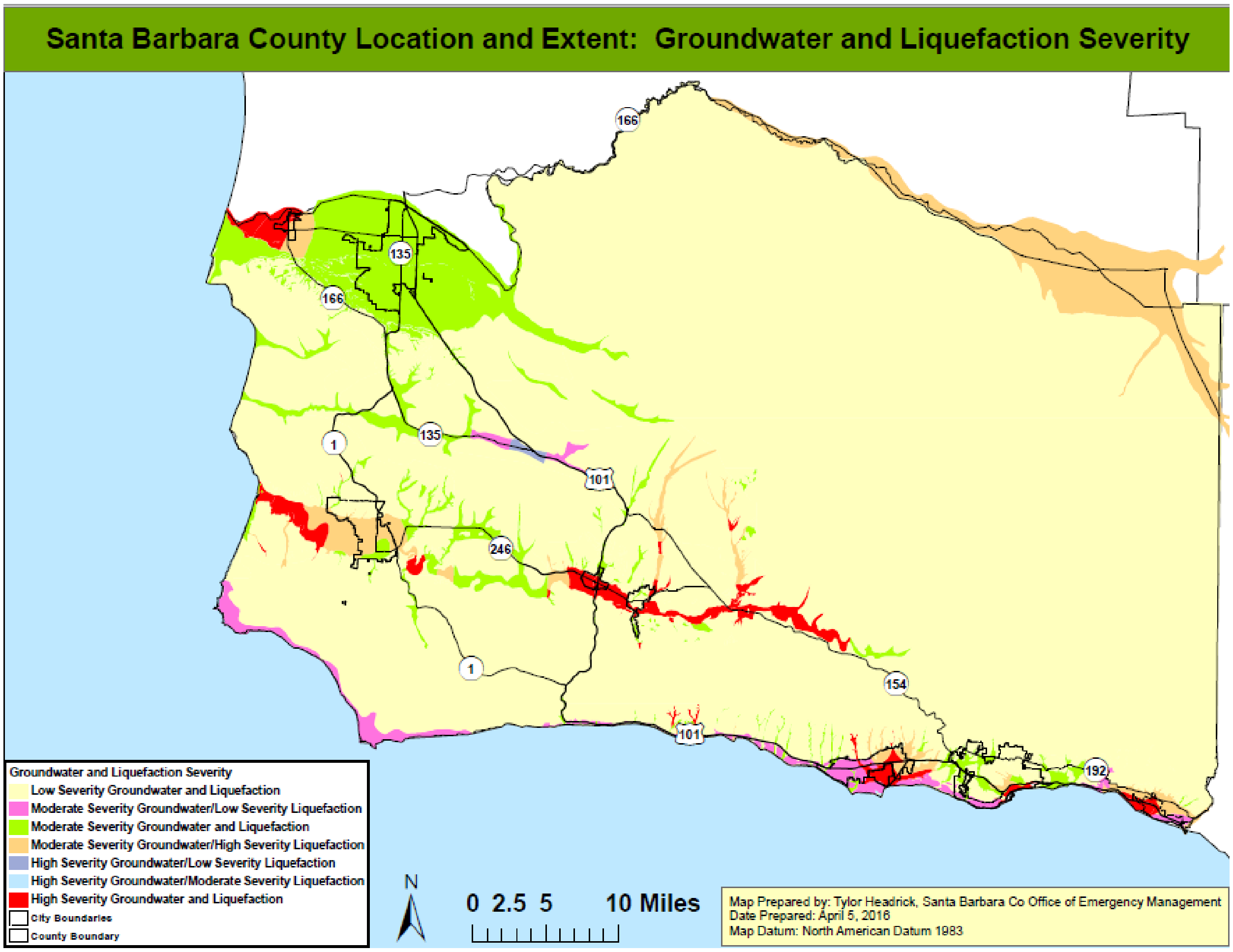
As previously mentioned, Santa Barbara County is located in a high seismic activity zone in the Transverse Range geologic province. Movement of continental plates manifest primarily along the San Andreas Fault system. The San Andreas Fault is situated seven miles northeast of Santa Barbara County; active faults in the San Andreas Fault system that fall within Santa Barbara County include the Nacimiento, Ozena, Suey, and Little Pine faults. Other active faults in the region include the Big Pine, Mesa, Santa Ynez, Graveyard-Turkey Trap, More Ranch, Pacifico, Santa Ynez, and Santa Rose Island faults. The Santa Barbara County Comprehensive Plan Seismic Safety and Safety Element provides descriptions of all faults in Santa Barbara County. This list includes historically active, active, potentially active, and inactive faults, as well as their location and fault length. A map of faults in the Santa Barbara County region is located below (**Figure 5.1**).

Figure 5.1 Earthquake Faults in Santa Barbara County



After earthquakes, some regions may be prone to liquefaction. On level ground, liquefaction results in water rising to the ground surface. On sloping ground, liquefaction will usually result in slope failure such as the event at the Sheffield Dam in the aftermath of the 1925 Santa Barbara earthquake. Liquefaction risk is considered high if there are soft soils (Types D or E) present. The National Earthquake Hazards Reduction Program (NEHRP) rates soils from hard to soft, and gives the soils ratings from Type A through Type E. The hardest soils are rated Type A, and the softest soils are rated Type E. The majority of the soils in Santa Barbara County are types A-C, with some areas having type D. There have been no Type E soils identified. (NOTE: A further discussion of soils can be found in the Santa Barbara County Comprehensive Plan Seismic Safety and Safety Element, along with maps of the expansive soils and collapsible soils problems ranking.) Liquefaction risk is also determined by depth to groundwater. Most of the low coastal plan and valley bottoms are underlain by alluvium and given a moderate rating with respect to liquefaction potential. Based on this information and work conducted as part of the Santa Barbara County Comprehensive Plan a map was generated indicating groundwater and liquefaction severity (**Figure 5.2**).

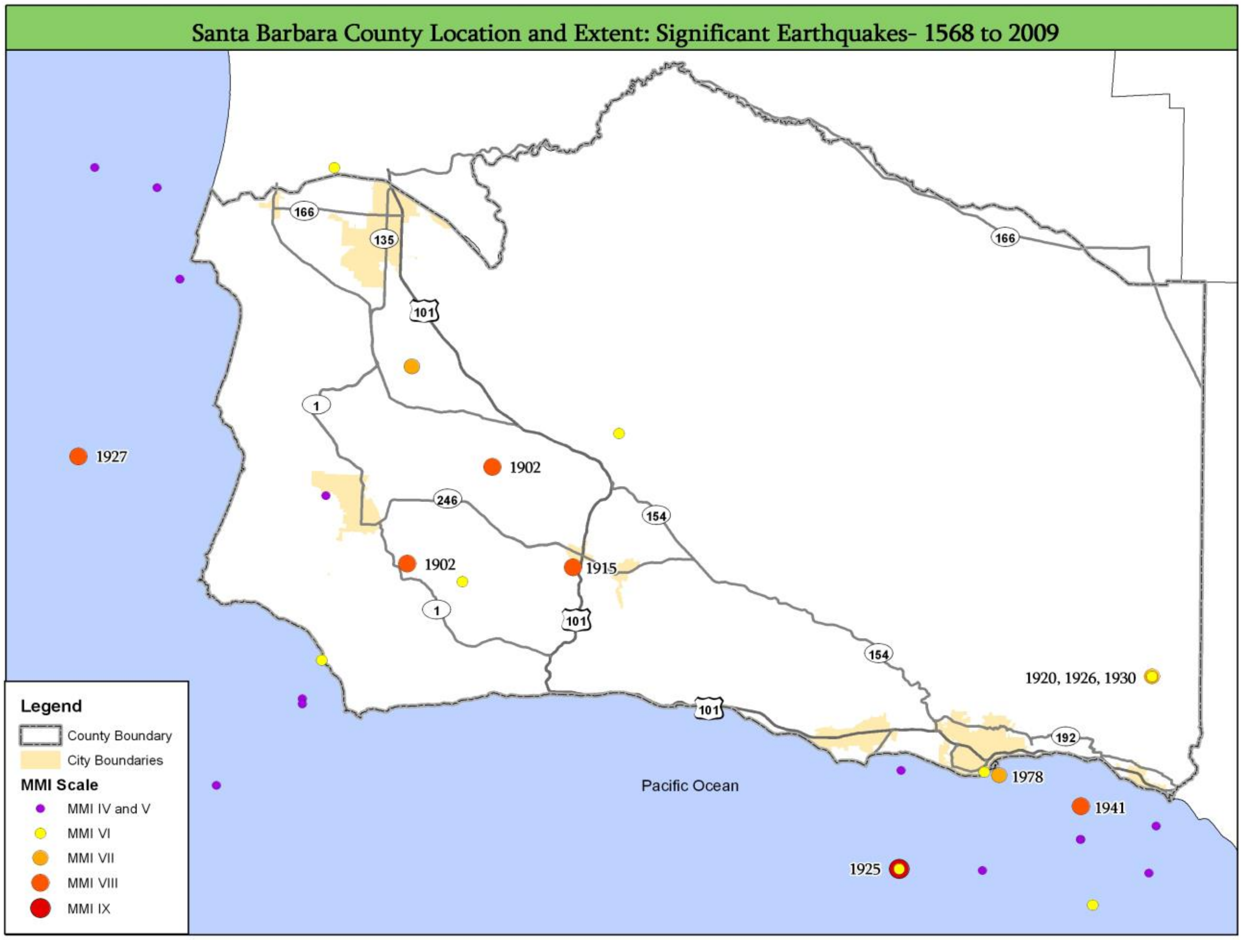
Figure 5.2 Groundwater and Liquefaction Severity



5.4.1.1.3 History of Hazard in Santa Barbara County

Santa Barbara is located in a high seismic activity zone and as such has a long history of earthquakes. Although most seismic activity in California occurs along the San Andreas Fault system, most historic seismic events in the Santa Barbara region have been centered offshore on an east-west trending fault between Santa Barbara and the Channel Islands. The below map (**Figure 5.3**) displays historical epicenters of earthquakes located in the Santa Barbara County since 1568. There have not been any significant earthquakes in Santa Barbara County since 2009. The dates of the more significant earthquake events are provided adjacent to the epicenters.

Figure 5.3 Significant Earthquakes Since 1568



While more extensive discussion of previous earthquakes in Santa Barbara County is available in the Seismic and Safety Element of the Santa Barbara County Comprehensive Plan, the following information provides an overview of the more recent, significant events:

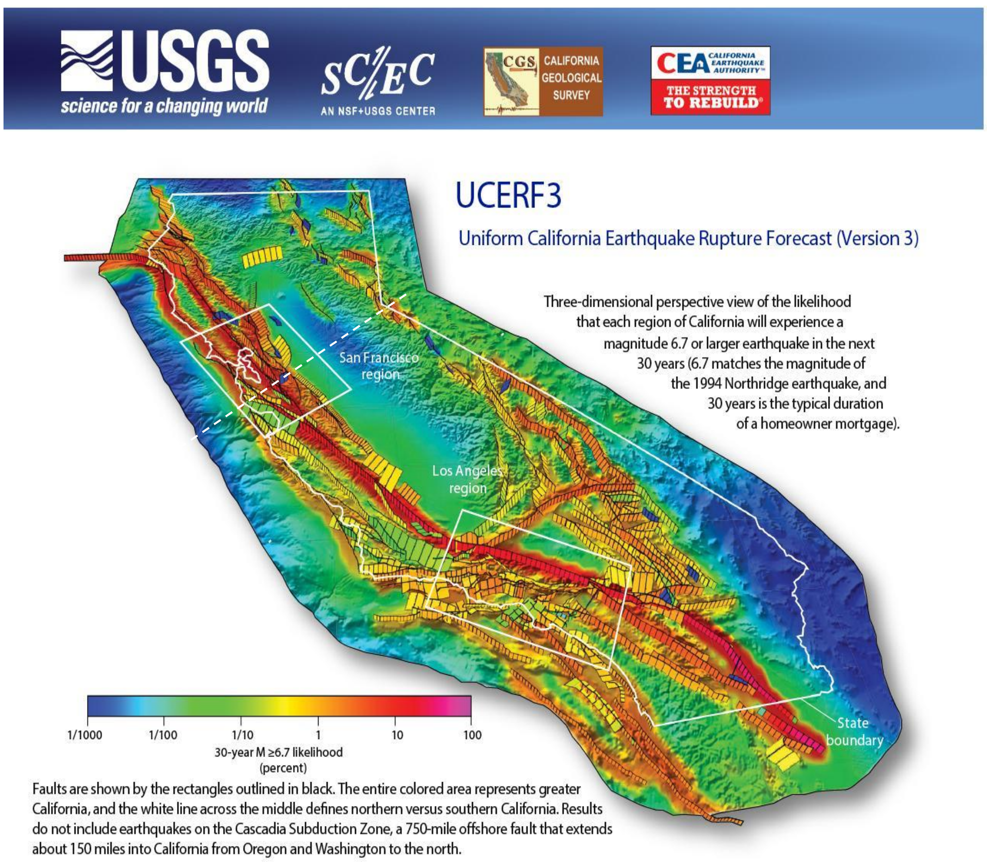
> In March of 1978, and continuing sporadically through July of 1978, a swarm of small earthquakes, called micro-earthquakes occurred underneath the northeastern end of the Santa Barbara Channel. Toward the end of the micro-earthquake swarm, in July and early August of 1978, an unusually large amount of oil and tar was reported on local beaches in Santa Barbara. A common occurrence for the Santa Barbara area, the oil from these natural seeps was considered only a minor nuisance. On August 13, 1978, an earthquake occurred just to the southwest of the City of Santa Barbara, about 5 miles beneath the Santa Barbara Channel. The earthquake ruptured to the northwest, focusing its energy toward Goleta, the most intense ground motion occurring between Turnpike Road and Winchester Canyon Road, an area that includes the University of California, Santa Barbara. A strong-motion seismograph on the University of California campus recorded an acceleration of 0.45 times that of gravity. Another seismograph, located at the top of North Hall, recorded an acceleration of 0.94 times that of gravity. Sixty-five people were treated for injuries at local hospitals. No deaths were reported.

On December 22, 2003 at 11:15 in the morning a magnitude 6.5 earthquake struck the central California coast. The event, known as the San Simeon Earthquake, was located 11 kilometers northeast of San Simeon, and 39 kilometers west/northwest of Paso Robles. Although the San Simeon Earthquake had a more significant impact on San Luis Obispo County, the event was reportedly felt as a MMI VI in Guadalupe and Santa Maria and as a MMI V in Lompoc, Santa Ynez and Solvang. According to reports on the San Simeon earthquake by the U.S. Geological Survey and U.C. Berkeley Seismological Laboratory, two (2) people were killed, 40 people were injured, over 40 buildings collapsed or were severely damaged and more than 10,000 homes and businesses were without power. The most severe damage was to un-reinforced masonry (URM) structures that had not yet been retrofitted to better withstand earthquakes. In Santa Barbara County, there was minor damage to more than 30 URM buildings in the City of Guadalupe.

5.4.1.1.4 Probability of Occurrence

The United States Geological Survey (USGS) and their partners, as part of the latest Uniform California Earthquake Rupture Forecast Version 3 (UCERF3; 2015), have estimated the chances of having large earthquakes throughout California over the next 30 years (**Figure 5.4**).

Figure 5.4 Rates for Earthquake of Magnitude 6.7 or Larger in the Next 30 years (USGS, 2015)



Statewide, the rate of earthquakes around Magnitude 6.7 (the size of the 1994 Northridge earthquake) has been estimated to be one per 6.3 years (more than 99% likelihood in the next 30 years); in southern California, the rate is one per 12 years (93% likelihood in the next 30 years). Southern California's rates are given in **Table 5.4**.

Table 5.4 Southern California Region Earthquake Likelihoods (UCERF3, 2015)

Magnitude (greater than or equal to)	Average Repeat Time (years)	30-year likelihood of one or more events
5	0.24	100%
6	2.3	100%
6.7	12	93%
7	25	75%
7.5	87	36%
8	522	7%

5.4.1.1.5 Climate Change Considerations

To date, no credible evidence has been provided that links climate to earthquakes; however, climate and weather does play a significant role in the response and recovery from earthquakes. Effects from climate change could create cascading complications and impacts.

5.4.1.2 Wildfire

5.4.1.2.1 Description of Hazard

Wildfires can be classified as either a wildland fire or a wildland-urban interface (WUI) fire. The former involves situations where wildfire occurs in an area that is relatively undeveloped except for the possible existence of basic infrastructure such as roads and power lines. A WUI fire includes situations in which a wildfire enters an area that is developed with structures and other human developments. In WUI fires, the fire is fueled by both naturally occurring vegetation and the urban structural elements themselves. According to the National Fire Plan issued by the U.S. Departments of Agriculture and Interior, the wildland-urban interface is defined as "*…the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.*"

The WUI fire can be subdivided into three categories (NWUIFPP, 1998): The *classic wildland-urban interface* exists where well-defined urban and suburban development presses up against open expanses of wildland areas. The *mixed wildland-urban interface* is characterized by isolated homes, subdivisions, and small communities situated predominantly in wildland settings. The *occluded wildland-urban interface* exists where islands of wildland vegetation occur inside a largely urbanized area. Generally, many of the areas at risk within the Santa Barbara County fall into the classic wildland-urban interface category.

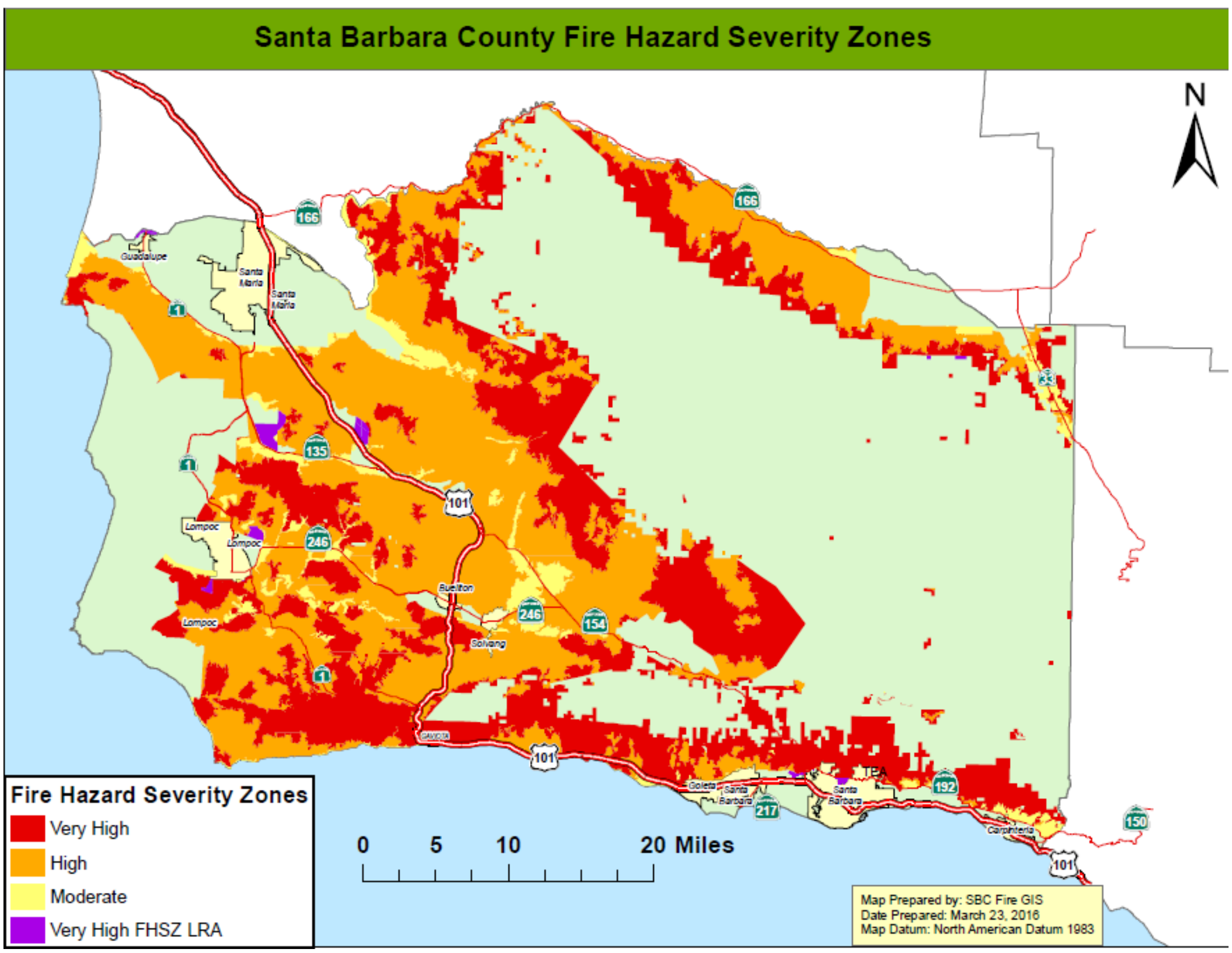
Certain conditions must be present for a wildfire hazard to occur; a large source of fuel must be present, the weather must be conducive (generally hot, dry, and windy), and fire suppression sources must not be able to easily suppress and control the fire. The cause of a majority of wildfires is human-induced or lightning; however, once burning, wildfire behavior is based on three primary factors: fuel, topography, and weather.

Fuel will affect the potential size and behavior of a wildfire depending on the amount present, its burning qualities (e.g. level of moisture), and its horizontal and vertical continuity. Topography affects the movement of air, and thus the fire, over the ground surface. The terrain can also change the speed at which the fire travels, and the ability of firefighters to reach and extinguish the fire. Weather as manifested in temperature, humidity and wind (both short and long term) affect the probability, severity, and duration of wildfires.

5.4.1.2.2 Location and Extent of Hazard in Santa Barbara County

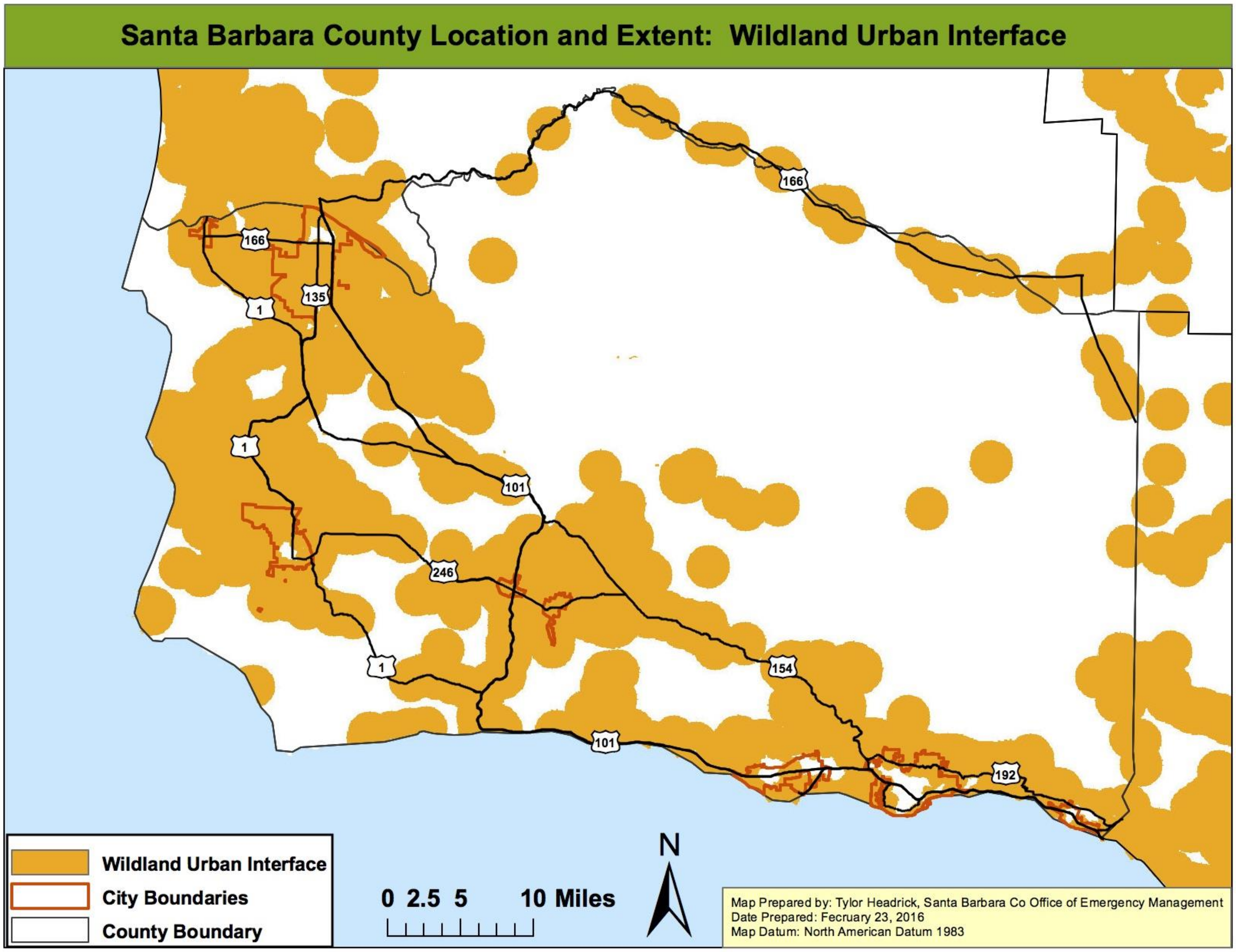
The climate, topography, and vegetation in Santa Barbara County is conducive to wildfires. California Department of Forestry and Fire Protection, Fire and Resource Assessment Program (CDF-FRAP) were mandated to map areas of significant fire hazards based on fuels (vegetation), terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones, define the application of various mitigation strategies to reduce risk associated with wildland fires. The most current mapping efforts by CDF-FRAP were conducted in 2007. The map below shows the Fire Hazard Severity Zones located in Santa Barbara County (**Figure 5.5**).

Figure 5.5 Fire Hazard Severity Zones



CDF-FRAP developed data that displays the relative risk to areas of significant population density from wildfire. This data is created by intersecting residential housing unit density with proximate fire threat, to give a relative measure of potential loss of structures and threats to public safety from wildfire. The map (**Figure 5.6**) was generated using this data but shows only the wildland-urban interface (WUI) in Santa Barbara County. The WUI map depicts areas where potential fuels treatments will be prioritized to reduce wildland fire threats.

Figure 5.6 Wildland-Urban Interface (WUI)



Fire representatives on the Mitigation Advisory Committee (MAC) acknowledge that the WUI data shown in Figure 5.6 was developed on a statewide basis and does not consider the placement of local neighborhoods within the geography. Santa Barbara County Fire has synthesized the data at a more local level to convey communities at risk. To help protect people and their property from potential catastrophic wildfire, the National Fire Plan directs funding to be provided for projects designed to reduce the fire risks to communities. A fundamental step in achieving this goal was the identification of communities that are at high risk of damage from wildfire. These high risk communities identified within the WUI, were published in the Federal Register in 2001. At the request of Congress, the Federal Register notice only listed those communities neighboring federal lands. The list represents the collaborative work of the 50 states and five federal agencies using a standardized process, whereby states were asked to submit all communities within their borders that met the criteria of a structure at high risk from wildfire. The following list contains the federally regulated (communities which adjoin federal lands) communities at risk within Santa Barbara County:

- Carpinteria
- Casmalia
- Cuyama
- Gaviota
- Goleta
- Lompoc
- Mission Hills
- Orcutt
- Santa Barbara
- Tajiguas
- Vandenberg Air Force Base
- Vandenberg Village

With California's extensive WUI situation, the list of communities extends beyond just those adjacent to Federal lands. After the 2000 fire season the California Department of Forestry and Fire Protection (CAL FIRE), working with the California Fire Alliance, developed a list of communities at risk from wildfire using 1990 Census and USGS Geographic Names Information System data to identify populated places, and CAL FIRE's Fire and Resource Assessment Program (FRAP) fuel hazard data. In addition to the already-mentioned communities, they designated the following as WUI Communities at Risk:

- Buellton
- Garey
- Guadalupe
- Isla Vista
- Los Alamos
- Los Olivos
- Montecito
- Santa Maria
- Santa Ynez
- Sisquoc
- Solvang
- Summerland
- Ventucopa

Combining both lists, there are currently 25 communities on the Communities at Risk List in Santa Barbara County. The California State Forester (CAL FIRE Director) has assigned the role of managing the list to the California Fire Alliance (Alliance). In addition to the 25 State and Federal recognized communities, there are other communities within the county that are also at risk of wildfire and need to be identified. Communities that were not captured in any state or federally recognized list, but have been identified by County Fire and other jurisdictions to be at risk include:

- Cebada Canyon
- Toro Canyon
- El Capitan
- Woodstock
- Jonata Ranch/Bobcat Springs
- Hope Ranch
- Miguelito Canyon
- Mission Canyon
- Trout Club
- Painted Cave
- Rosario Park
- Refugio Canyon
- Jalama
- Tepusquet Canyon
- Paradise
- Gobernador

Many of the communities at risk listed above contain relatively old homes that reflect the building materials and/or codes in effect at the time of construction. As such, large numbers of homes are at increased risk of ignition due to structure vulnerabilities (e.g., wood shake roofs and siding, open eaves, unscreened crawlspace and attic vents), which research has shown to be important in most home losses during wildfires. In addition to hazard reduction through fuel reduction, education of homeowners and mitigation of structure ignition vulnerabilities is therefore recognized as an important priority in these communities at risk. Programs that support retrofits to existing structures, combined with building codes that make future structures more fire resistant, are needed in many fire-prone areas.

The figure (**Figure 5.7**) below provides an overview of the location of the Communities at Risk.

Figure 5.7 Communities at Risk

5.4.1.2.3 History of Hazard in Santa Barbara County

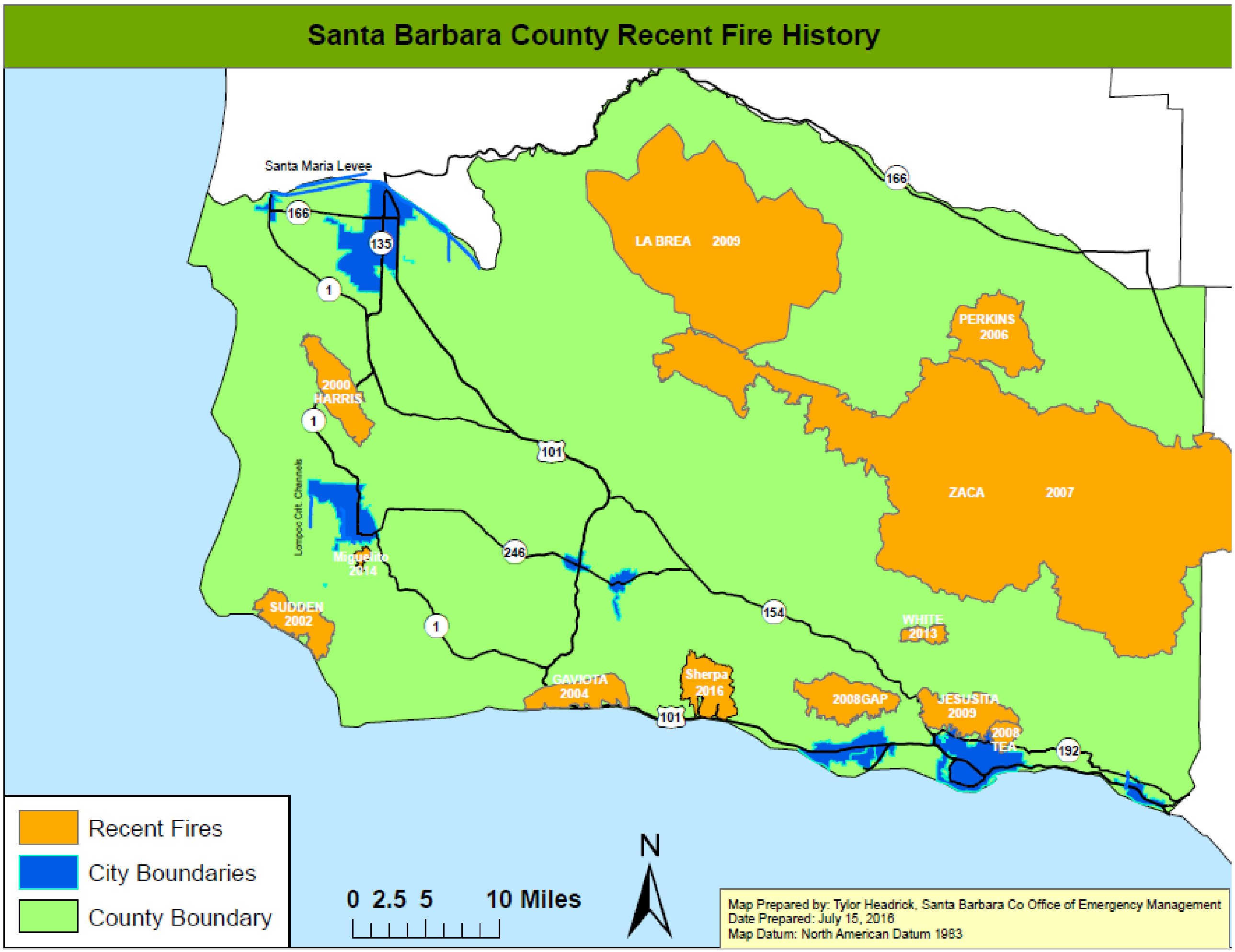
Because Santa Barbara County is prone to wildfires, there is a long history of wildfires in the County. **Table 5.5** lists the major wildfires in Santa Barbara County from 1922-2016.

Table 5.5 Major Wildfires in Santa Barbara County

Year	Fire Name	Acres Burned
1922	Kellye Ranch	59,600
1923	Oso Canyon	70,000
1928	Aliso Canyon	42,880
1933	Indian Canyon	30,800
1950	San Marcos	9,500
1953	Big Dalton	73,450
1955	Refugio	84,770
1964	Coyote	67,000
1966	Wellman	93,600
1971	Romero	14,538
1977	Sycamore Canyon	805
1977	Hondo Canyon	8,087
1979	Spanish Ranch	1,190
1979	Eagle Canyon	3,765
1990	Paint	4,424
1993	Marre	43,864
1994	Oak Hill	2,130
1997	Santa Rosa	3,074
1999	Spanish Ranch	22,296
1999	Camuesa	180
2000	Harris	8,684
2002	Sudden	7,500
2004	Gaviota	7,197
2006	Perkins	14,923
2007	Zaca	240,807
2008	Gap	9,443
2008	Tea	1,940
2009	Jesusita	8,733
2009	La Brea	89,489
2010	Bear Creek	1,252
2011	Figueroa	698
2013	White	1,984
2015	Miguelito	632
2016	Sherpa	7,474

The CDF-FRAP compiles fire perimeters of wildfires and has established an on-going fire perimeter data capture process. The map below (**Figure 5.8**) shows historic, significant wildfire perimeters in Santa Barbara County. Fire perimeters provide a reasonable view of the spatial distribution of past large fires.

Figure 5.8 Santa Barbara County Fire History

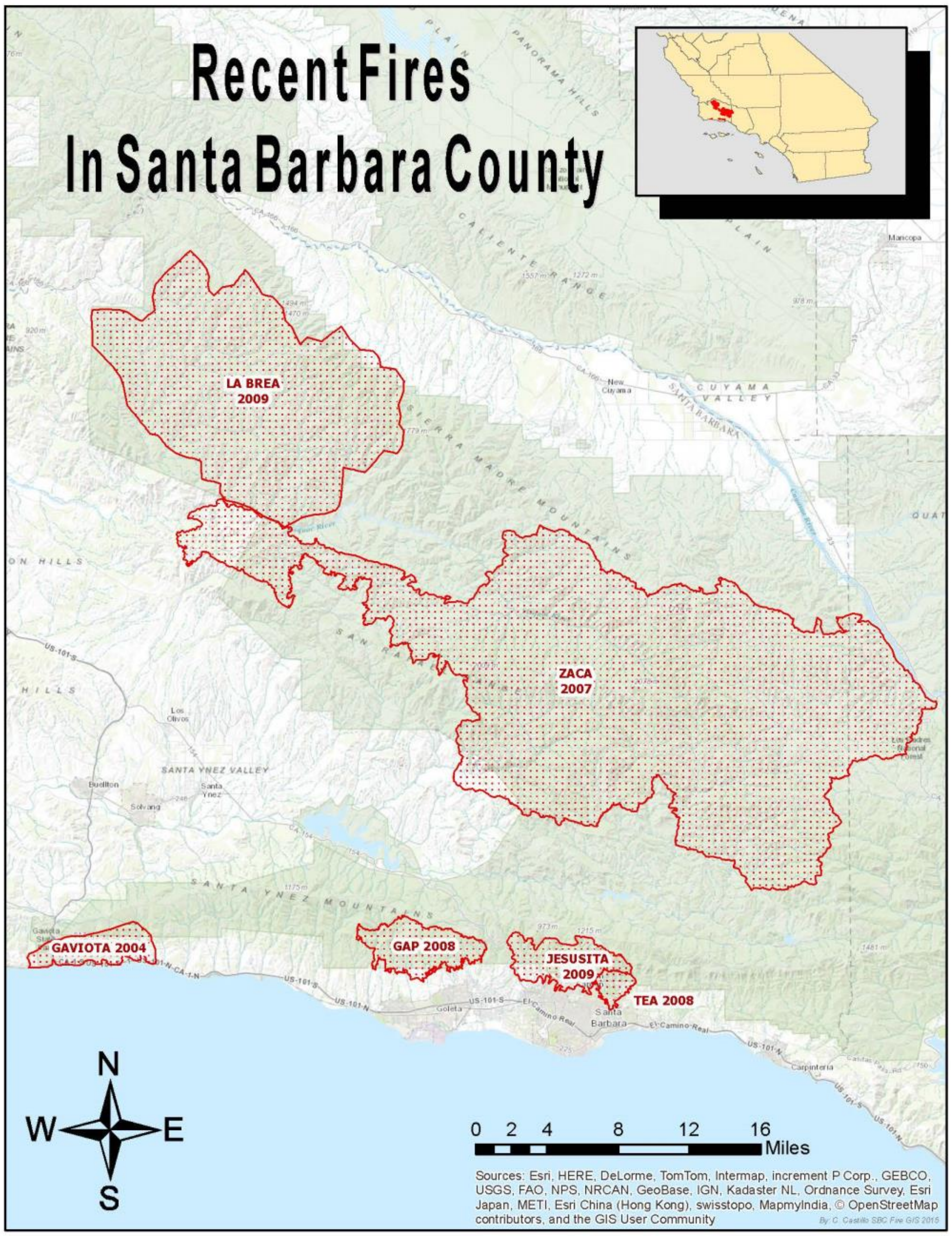


Over the last ten years, Santa Barbara County has experienced seven (7) major fires. Three of these fires; Gap, Tea, and Jesusita; directly threatened the heavily populated Santa Barbara Front Country. Two of these fires, Tea and Jesusita, destroyed close to three hundred structures and burned a total 16 ½ square miles. Combined, the La Brea Fire and the Zaca Fire burned a total of 518 square miles, predominately in backcountry areas of the County. Although these two fires did not directly threaten urban areas, the smoke and ash produced created air quality issues for hundreds of miles. Recently the Miguelito and the Mesa fires threatened the Lompoc area (2015). While more extensive discussion of previous wildfires in Santa Barbara County is available, the following information provides an overview and the location (**Figure 5.9**) of the more recent, significant events:

- The Zaca Wildfire burned 240,207 acres, making the Zaca Fire one of the largest wildfires in California history. The total cost of suppression was over $119 million.
- The Gap Wildfire charred 9,443 acres of forest in the Los Padres National Forest. The fire was located in the Santa Ynez Mountains north of the community of Goleta.

- The Jesusita Fire burned over 8,700 acres in the hills above the City of Santa Barbara. This wildfire was driven by a combination of a large dead fuel bed and sundowner winds gusting over 60 miles per hour. The damage, as a result of this fire, was significant, with 80 homes destroyed and another 15 homes badly damaged. No deaths were reported, but at least 30 firefighters were injured battling the fire.
- The La Brea Wildfire burned over 89,000 acres in the Los Padres National Forest in the County of Santa Barbara. The fire was fueled by very hot temperatures, low relative humidity and significant heavy fuels.

Figure 5.9 Recent, Significant Fire Events

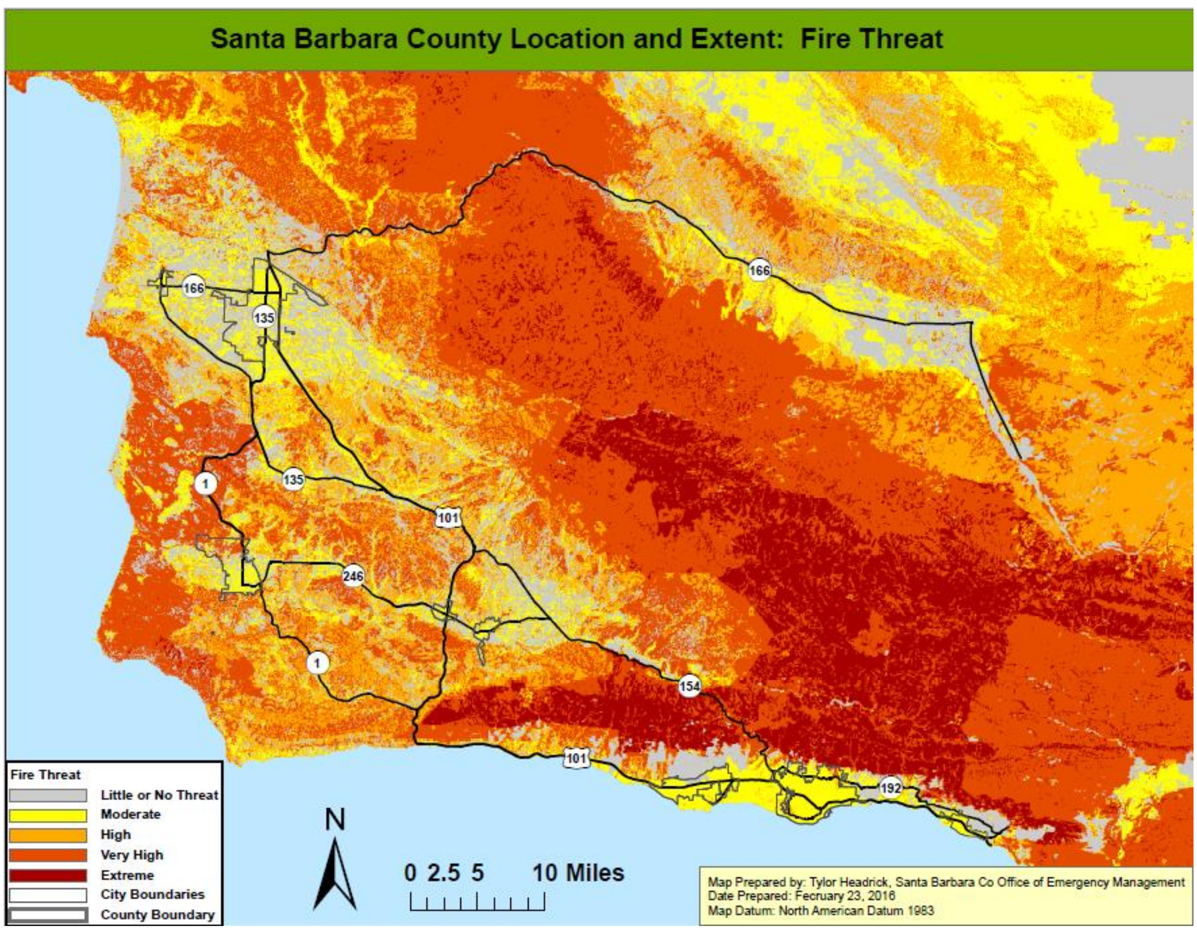


5.4.1.2.4 Probability of Occurrence

Vegetation and topography were the significant elements in the identification of the fire threat zones. A substantial amount of the vegetation in Santa Barbara is commonly called chaparral, it is a dense and scrubby bush that has evolved to persist in a fire-prone habitat. Chaparral plants will eventually age and die; however, they will not be replaced by new growth until a fire rejuvenates the area. Chamise, manzanita and ceanothus are all examples of chaparral which are quite common in Santa Barbara County.

Santa Barbara County was subject to 29 major wildfires over 88 years, resulting in a 33% chance of occurrence in any given year. In addition, the map below (**Figure 5.10**) shows the threat of fire to Santa Barbara County. Fire threat is a combination of two (2) factors: 1) fire frequency or the likelihood of a given area burning, and 2) potential fire behavior. These two factors are combined to create four (4) threat classes ranging from moderate to extreme.

Figure 5.10 Fire Threat



5.4.1.2.5 Climate Change Considerations

Climate change plays a significant role in wildfire hazards. The changing conditions from wet to dry can create more fuel; the increased possibility of high winds increase risk and present a challenge, and drought conditions could hinder ability to contain fires. Large wildfires also have several indirect effects beyond those of a smaller, local fire. These may include air quality and health issues, road closures, business closures, and other forms of losses. Furthermore, large wildfires increase the threat of other disasters such as landslide and flooding.

5.4.1.3 Landslide and other Earth Movements

5.4.1.3.1 Description of Hazard

Landslides can be defined as the movement of a mass of rock, debris, or earth down an incline. Types of landslides include: rock falls, rock slides, deep slope failures, shallow debris flows, and mud flows.

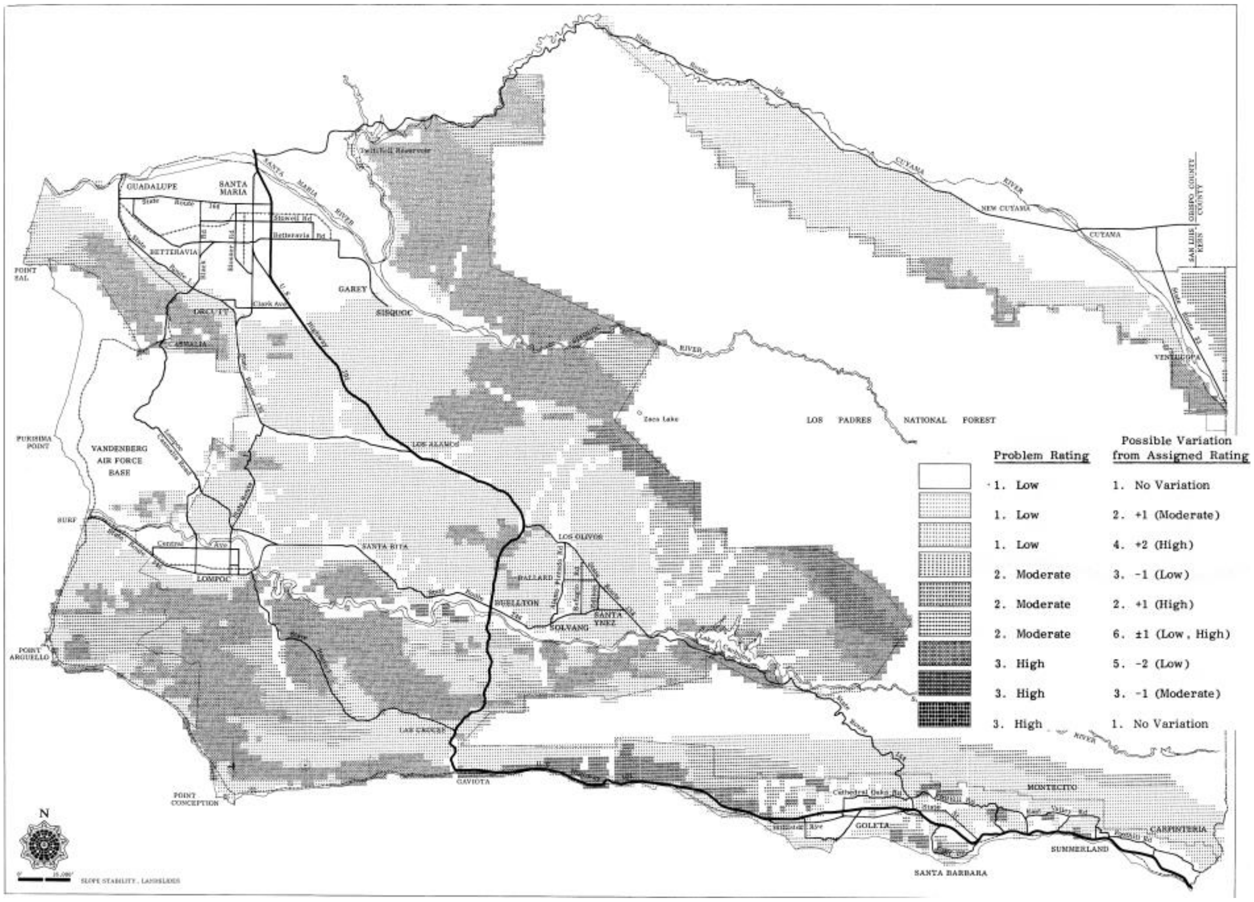
- Slope failure occurs when there is erosion of slopes by surface-water runoff. The intensity of slope wash is dependent on the discharge and velocity of surface runoff and on the resistance of surface materials to erosion.
- Mudflows are defined as flows or rivers of liquid mud down a hillside on the surface of normally dry land. They occur when water saturates the ground, usually following long and heavy rain falls, or rapid snow melt. Mud forms and flows down slope if there is no ground cover such as brush or trees to hold the soil in place.
- Debris Flow is defined when water begins to wash material from a slope or when water sheets off of a newly burned stretch of land. Chapparel land is especially susceptible to debris flows after a fire. The flow will pick up speed and debris as it descends the slope. As the system gradually picks up speed it takes on the characteristics of a basic river system, carrying everything in its path along with it.

The most common cause of a landslide is an increase in the down slope gravitational stress applied to slope materials, also known as over-steepening. Over-steepening can be caused by natural processes or by man-made activities. Undercutting of a valley wall by stream erosion or of a sea cliff by wave erosion are ways in which over-steeping may occur naturally.

5.4.1.3.2 Location and Extent of Hazard in Santa Barbara County

The location and extent of landslides are extremely difficult to predict consistently for a planning area the size of Santa Barbara County. Landslides and landslide prone sedimentary formations are present throughout the coastal plain of western Santa Barbara County (**Figure 5.11**). Landslides also occur in the granitic mountains of East Santa Barbara County, although they are less prevalent. Many of these landslides are thought to have occurred under much wetter climatic conditions than at present. Recent landslides are those with fresh or sharp geomorphic expressions suggestive of active (ongoing) movement or movement within the past several decades. Reactivations of existing landslides can be triggered by disturbances such as heavy rainfall, seismic shaking and/or grading. Many recent landslides are thought to be reactivations of ancient landslides.

Figure 5.11 Slope Stability, Landslides



The Santa Barbara County Comprehensive Plan Seismic Safety and Safety Element lists the areas in Santa Barbara County where there is fairly severe land sliding and associated geologic formations. The areas are as follows:

- Foothills in the Summerland area
- Foothills of the South Coast – from Santa Barbara west to Gaviota Pass
- Hope Ranch area – west of Lavigia Hill to Goleta
- Sea cliffs along the coast from Santa Barbara to Gaviota, particularly those with out-of-slope dips
- Solvang area south of the Santa Ynez River in the vicinity of, and east of Alisal Ranch
- Areas east and northeast of Los Olivos near the Los Padres National Forest boundary
- Lompoc area south of Santa Ynez River
- Mountains south of Guadalupe and east of Point Sal

Several areas in the County are prone to more frequent rain induced landslides, resulting in disruption to transportation and damage to roadways. The most common areas of recent historic slides are listed below.

South County

Road	Year
Palimino Road	1995, 1998
Gibraltar Road	1995, 1998, 2001, 2003
Glen Annie Road	1995, 1998, 2001, 2004
Refugio Road	1995, 1998, 2001
Ortega Hill Road	1195, 1998
Stagecoach Road	2003, 2004, Constant
Painted Cave	1995, 1998
Old San Marcus Road	1995, 1998, Currently Moving
Gobernador Canyon	1995, 1998, Currently Moving
East Mountain Drive	1995, 1998, 2001
All Road underlain by the Rincon Shale Formation	

North County

Road	Year
Miguelito Canyon	1995, 1998, ongoing threat
Sweeney Road	1995, 1998, ongoing threat
Jalama Road	1995, 1998, ongoing threat
Point Sal Road	1995, 1998, ongoing threat
Drum Canyon Road	1995, 1998, ongoing threat
Mail Road	1995, 1998, ongoing threat
Santa Rosa Road	1995, 1998, ongoing threat
Figueroa Mountain Road	1995, 1998, ongoing threat

5.4.1.3.3 History of Hazard in Santa Barbara County

As previously mention, Santa Barbara County is prone to landslides; however many are smaller in nature and are not well documented. Three (3) of the more significant recent landslides are discussed below:

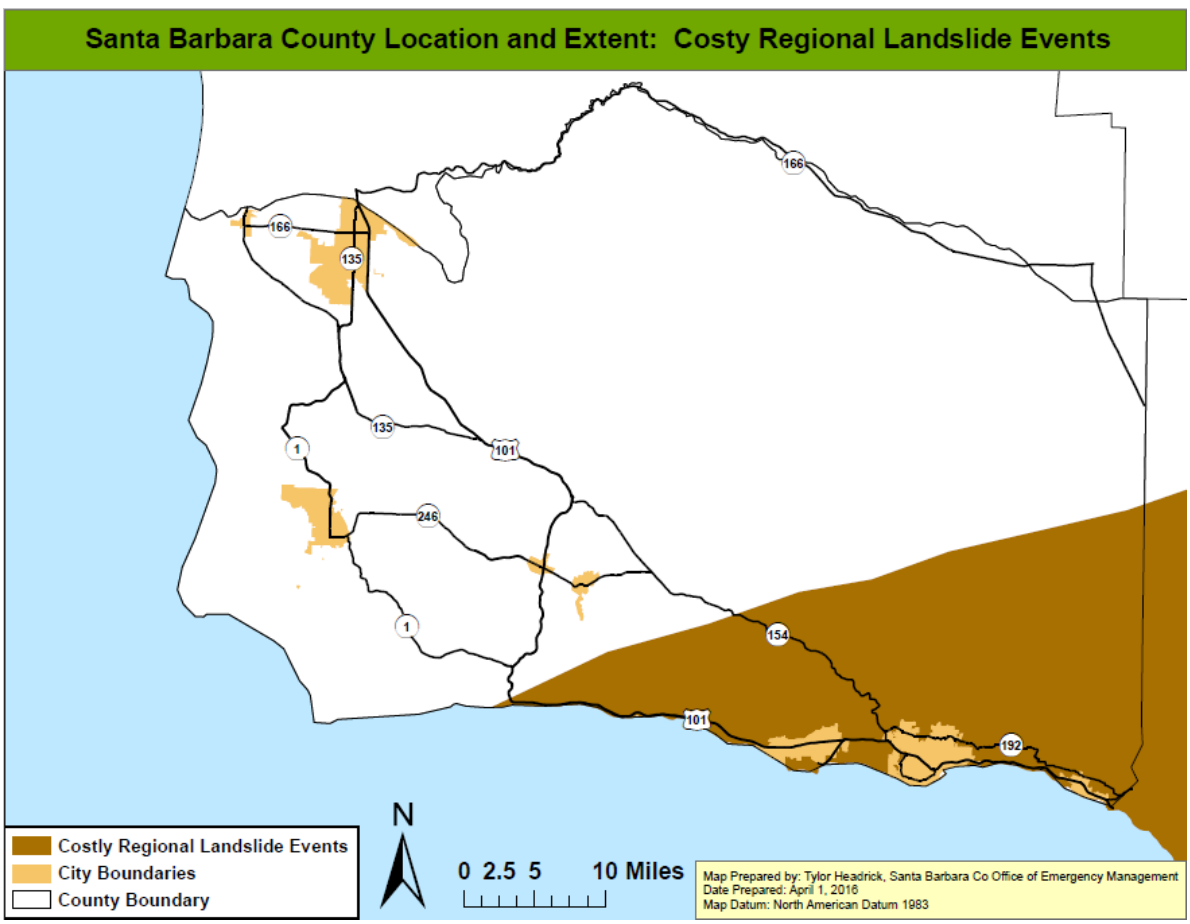
> In January 2005, a powerful Pacific storm brought heavy rain, snow, flash flooding, high winds and landslides to Central and Southern California. During the 5 day event, rainfall totals ranged from 3 to 10 inches over coastal areas with up to 32 inches in the mountains. With such copious rainfall, flash flooding was a serious problem across Santa Barbara, Ventura and Los Angeles counties. In Santa Barbara County, flash flooding and mudslides closed Gibraltar Road at Mt. Calvary Road, stranding several vehicles, while mudslides inundated 3 homes in Lake Casitas. Across Ventura county, flash flooding and mudslides closed down Creek Road at Hermosa Road. In addition, the Ventura Beach RV Resort was flooded and Highways 1 and 126 were closed due to flooding. Across Los Angeles county, flash flooding killed a homeless man in Elysian Park, flooded a mobile home park in Santa Clarita, closed Highway 1 and caused numerous problems in Palmdale. In the mountains, 4 to 12 feet of snowfall was recorded along with southeast winds between 30 and 50 MPH with higher gusts. Across the Central Coast and in the Salinas River Valley, high winds gusting to 65 MPH knocked down numerous trees and power lines. In La Conchita, a devastating mudslide killed 10 people, destroyed 15 homes and damaged 12 other homes. Overall, damage estimates for the entire series of storms that started December 27th,

2004 and ended on January 11th, 2005 were easily over $200 million with the most damage incurred by agricultural interests in Ventura County.

During the late 1990's in Sycamore Canyon, which resides near the border of Santa Barbara County and the City of Santa Barbara, a mud flow displaced a home from its foundation and moved it several feet downhill. This is only a minor example of the destruction that landslides can cause. In the spring of 1995, La Conchita, located at the western border of Ventura County and adjacent to Santa Barbara County, experienced a landslide that completely destroyed several houses in its path. A portion of the bank of the Cuyama River collapsed east of Santa Maria in 1998, affecting half a dozen cars and a tractor trailer rig on Highway 166, which were caught in the slide. Two people were killed.

In 1980 the most costly landslide events in the US occurred. The event depicted in this Santa Barbara County-specific map (**Figure 5.12**) affected six southern California counties, including Santa Barbara County. The type of landslide was mostly debris flow from heavy rainfall. Over $800 million dollars' worth of damage resulted from this event.

Figure 5.12 Costly Regional Landslide Events

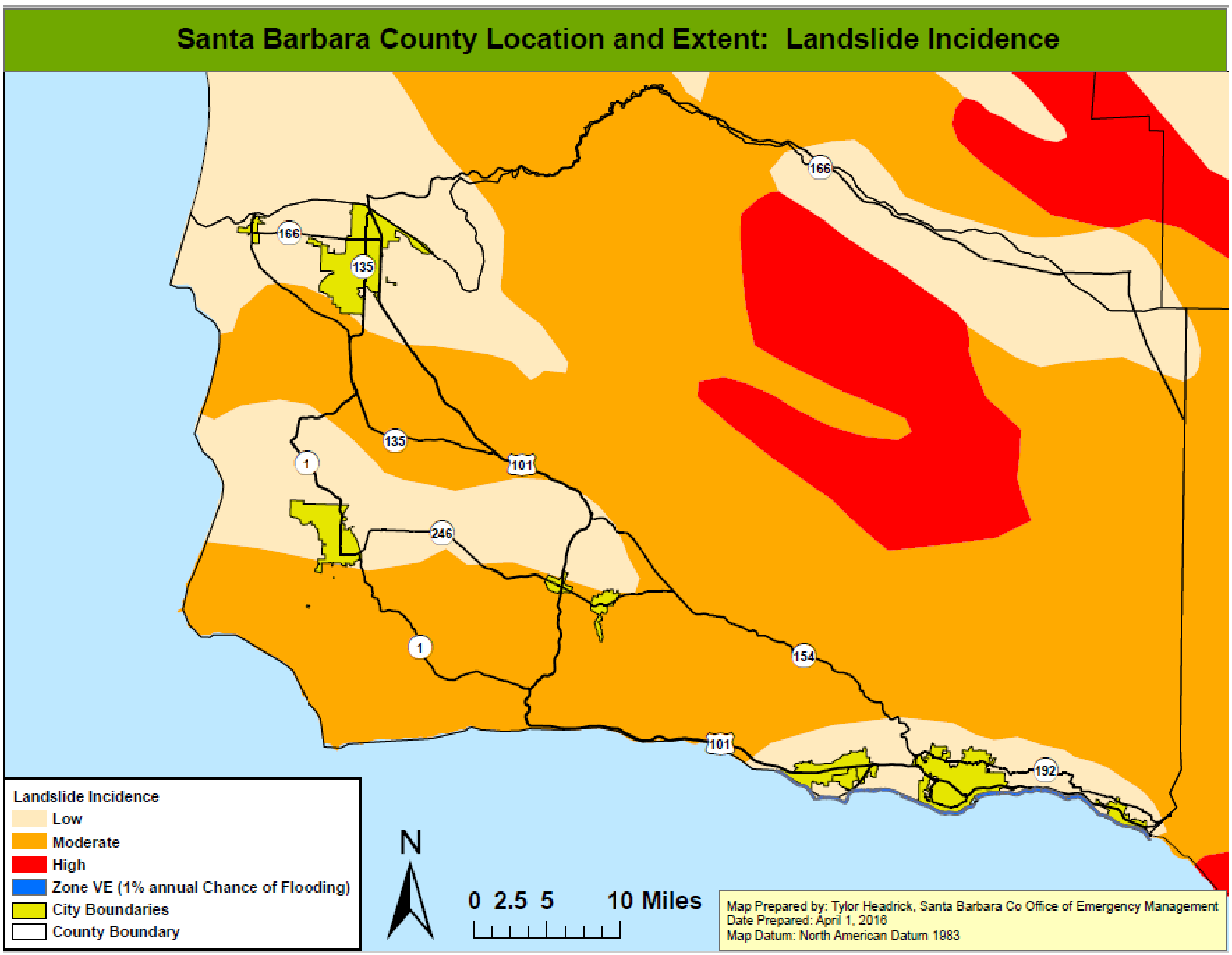


5.4.1.3.4 Probability of Occurrence

Figure 5.13 shows the general locations of high and moderate landslide risk in Santa Barbara County These areas are considered to have a higher probability of landslide occurrence than the low landslide risk areas in Santa Barbara County.

In order for landslides to occur, the correct geological conditions, which include unstable or weak soil or rock, and topographical conditions, such as steep slopes, are necessary. Heavy rain often triggers these hazards, as the water adds extra weight that the soil cannot bear. Over irrigating has the same affect. Earthquakes can also affect soil stability, causing enough weakening to favor gravitational forces.

Figure 5.13 Landslide Incidence



5.4.1.3.5 Climate Change Consideration

Climate change can increase the frequency and/or intensity of landslides. Changes in precipitation, specifically the increased frequency of intense precipitation, can result in a water content the ground cannot tolerate, and may cause landslides. These landslides may happen more frequently due to the increased number of heavy rainfall events. Also, the increased heavy precipitation events may cause instability in areas where landslides we not as likely before. Therefore, resulting landslides may be larger or more widespread.

5.4.1.4 Flood

5.4.1.4.1 Description of Hazard

A flood is a general and temporary condition of partial or complete inundation on land that is normally dry. Several factors determine the severity of floods, including rainfall intensity and duration, antecedent moisture conditions, surface permeability, and geographic characteristics of the watershed such as shape and slope. Other causes can include a ruptured dam or levee, rapid ice or snow melting in the mountains, under-engineered infrastructure, or even a poorly placed beaver dam can overwhelm a river or channel and send water spreading over adjacent land or floodplains.

A large amount of rainfall in a short time can result in flash flood conditions, as can a dam failure or other sudden spill. The National Weather Service's definition of a flash flood is a flood occurring in a watershed where the time of travel of the peak of flow from one end of the watershed to the other is less than six hours.

Another form of flooding occurs when coastal storms produce large ocean waves that sweep across coastlines making landfall. Storm surges inundate coastal areas, destroy dunes, and cause flooding. If a storm surge occurs at the same time as high tide, the water height will be even greater. The County historically has been vulnerable to storm surge inundation associated with tropical storms and El Nino.

5.4.1.4.2 Location and Extent of Hazard in Santa Barbara County

The geographical location, climate, and topography of Santa Barbara County make the county prone to flooding. In regions such as Santa Barbara, without extended periods of below-freezing temperatures, floods usually occur during the season of highest precipitations or during heavy rainfalls after long dry spells. Additionally, due to the Mediterranean climate and the variability of rainfall, stream flow throughout the County is highly variable and directly impacted from rainfall with little snowmelt or base flow from headwaters. Watercourses can experience a high amount of sedimentation during wet years and high amounts of vegetative growth during dry and moderate years.

The drainages in the southern part of the County are characterized by high intensity, short duration runoff events, due to the relatively short distance from the top of the Santa Ynez Mountains to the Pacific Ocean. Runoff from high intensity, short duration storm events can cause inundation of over bank areas, debris including sediment, rock, downed trees in the water that can plug culverts and bridges, erosion and sloughing of banks, and loss of channel capacity due to sedimentation. The drainages in the northern part of the County are contained in the upper mountain areas, but broaden out into level valley floors. The drainages in the northern part of the County are generally characterized by longer duration and less intense storms than the southern coastal areas.

Another contributing factor to flooding is the County's location along the Pacific Ocean. With its 110 miles of coastline, the County is susceptible to storm surge events following storms off the coast. Additionally, portions of the County are subject to flooding due to flash flooding, urban flooding, river channel overflow, and downstream flooding.

5.4.1.4.3 History of Hazard in Santa Barbara County

Flooding has been a major problem throughout Santa Barbara County's history. Santa Barbara County has several hydrologic basins that have different types of flooding problems, including over bank riverine flooding, flash floods, tidal flooding/tsunamis, and dam failure. The most common flooding in Santa Barbara is due to riverine flooding and flash flood events.

Between 1862 and the 2014, Santa Barbara experienced 19 significant floods. Eight of these floods received Presidential Disaster Declarations. **Table 5.6** lists these floods, as well as information concerning the nature of the flooding and the extent of the damages.

Table 5.6 Historical Records of Large Floods in Santa Barbara County

Date	Damages	Source of Estimate	Comments
1862	Not available	1993 Precipitation Report	Largest discharges ever in California
1907	Significant damage to structures, crops	1993 Precipitation Report	4 straight days of rain, entire Lompoc Valley engulfed
1914	Twelve houses and six bridges lost	County of Santa Barbara Sanitation and Flood Control	Destroyed 2 dams, 22 deaths
1952	50+ homes inundated, large-scale evacuations	EIR, 1993 Precipitation Report	Propagated the formation of the Flood Control District
1964	Millions of dollars	Floodplain Information Montecito Streams Vicinity of Montecito, SB County	Relatively light rain fell on recently burned areas. 20' walls of water, mud, boulders, and trees
1969	$4.5 million	Floodplain Information Montecito Streams Vicinity of Montecito, SB County	Highest flows in 2900 years on Santa Ynez River, 16" of rain in 24 hours at Juncal Dam
1971	Federal Disaster Declaration	Floodplain Information Montecito Streams Vicinity of Montecito, SB County	High flows and flooding along Romero Canyon Creek, Garrapata Creek, and Toro Canyon Creek
1978	Millions of dollars, Presidential Disaster Declaration	1993 Precipitation Report and Hydrology Methods	Inundation of agricultural areas and mudslides.
1980	Presidential Disaster Declaration	n/a	Severe flooding, mudslides, and high tides throughout County
1982-1983	2 Presidential Disaster Declarations	n/a	Parts of southern California received over 200% of normal rainfall

Date	Damages	Source of Estimate	Comments
1993	$1.4 million in disaster recovery funds received from FEMA	1993 Precipitation Report and Hydrology Methods	180%-209% or normal rainfall, with highest-ever intensity for the County recorded at Buellton Fire Station: $1^{1}/_{4}$ inches in 15 minutes.
January 1995	$50 million, Presidential Disaster Declaration	1995 Floods	Flooding on most major channels in Goleta, Santa Barbara, Montecito, and Carpinteria
March 1995	$30 million, Presidential Disaster Declaration	1995 Floods	Major flooding in Goleta, Santa Barbara, and Montecito, many of the same structures flooded in January were flooded again
1998	$15 million, Presidential Disaster Declaration	1998 Flood Report	21.36” of rainfall that month in Santa Barbara, many areas at 600% of normal February rainfall
February 2005	$2 million	NCDC	In Santa Barbara county, flash flooding and mudslides closed down Highway 101 at Bates Road.
January 26, 2011	Total Individual Assistance: $1,909,557 Total Public Assistance: $75,414,223 Countywide per capita impact: Santa Barbara County- $9.43, Presidential Disaster Declaration	FEMA	Severe winter storms, flooding, and debris and mudflows occurred from December 17, 2010 to January 4, 2011. The counties affected include: Inyo, Kern, Kings, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Tulare.
March 2011	$1.7 Million	County Insurance Claims	A severe winter storm occurred in March 2011 that included flooding, debris and mudflows flows throughout Santa Barbara County
March 1, 2014	$500k	Television Reports	A strong winter storm caused significant damage to coastal properties on the

Date	Damages	Source of Estimate	Comments
			south coast of Santa Barbara County. Coastal Damage; Goleta Pier partially closed
December 12, 2014	<$100k	County Flood Control District	A brief but intense rainfall, portions of which covered a limited area that exceeded a 200-year return period, caused damage county-wide, mostly in the form of downed trees, bank erosion and sediment and debris deposition.

While there is extensive detailed documentation of historical flood events in Santa Barbara County, the following section provides a summary of the more recent significant flood events:

1992 Flood- The 1992 – 1993 rainy season was one of the wettest recorded in Santa Barbara County, areas of the County received 180% to 209% normal rainfall. One of the County's highest short-duration rainfall intensities was recorded during 1993; 1-¼-inches fell in fifteen minutes at the Buellton Fire Station. Following a 25-year storm event that occurred in late March, Santa Barbara was declared a federal disaster area with 12 creeks substantially damaged along with several detention basins and residences. Santa Barbara County received approximately $1.4 million in disaster recovery funds from FEMA. (1993 Precipitation Report and Hydrology Methods) (Presidential Disaster Declaration)

1995 Flood- The floods of 1995 brought widespread flooding to Santa Barbara County. The most severe flooding occurred on the South Coast while the rest of the County was largely spared from serious damages. On the South Coast, the 1995 Flood was more severe and wide spread than either the 1969 or 1967 floods. Flooding occurred on most major streams from Goleta to Montecito. Estimated public and private damages were around $100 million and the area was declared a federal disaster area. (1995 Floods)

January 1995- Flooding occurred on most major channels in Goleta, Santa Barbara, Montecito, and Carpinteria. Approximately 510 structures were reported flooded and/or damaged along the South Coast, with a total cost resulting from public and private damages of approximately $50,000,000. All modes of transportation in and out of the South Coast were cut off for several hours; some modes of transportation were not restored for several days. (1995 Floods) (Presidential Disaster Declaration)

March 1995- During the March 10th 1995 storm, major flooding occurred again in the areas of Goleta, Santa Barbara, and Montecito. More than 300 structures were reported flooded and/or damaged; many of the same structures flooded or damaged during the January 1995 storm event. Approximately 30 million dollars of public and private property were damaged during the storm. Once again, all modes of transportation in and out of the South Coast were cut off for several hours. (1995 Floods) (Presidential Disaster Declaration)

1998 Flood– February 1998 brought several record-breaking rainfalls with 50-year storm event intensities. The City of Santa Barbara recorded its wettest month in history, 21.36-inches of rainfall. By the end of the month, many areas in the County had received 600% of normal February rainfall. Flood related damages within Santa Barbara occurred during three major storm periods: February 1-4, February 6-9, and February 22-24. The cost to repair extensive flood damage to public and private property was estimated at $15 million. Just like in 1995, transportation throughout the County was disrupted through closures of roads, the Santa Barbara Airport, and train service. Flood damage was spread throughout the County and the County was declared a Federal Disaster Area on February 9. (Presidential Disaster Declaration)

Although the February storms had higher annual rainfalls, flooding in 1998 was considered less severe than other historical events due to flood control improvements, such as Cachuma Reservoir, and channel and debris dam maintenance performed by the County. (1998 Flood Report)

2005 Flood– A powerful Pacific storm tapped into a subtropical moisture source to produce heavy rain and flash flooding across Southwestern California. Overall, rainfall totals ranged from 4 to 8 inches over coastal areas to between 10 and 20 inches in the mountains. In Ventura County, State Route 150 was closed at the Dennison Grade due to flash flooding and mudslides. In Los Angeles County, numerous roadways were closed due to mudslide and flash flooding including Interstates 5 and 10, Highway 101 in Hollywood, North Topanga Canyon Road in the San Fernando Valley, Malibu Canyon Road near Malibu and East Colima Road in Walnut. *In Santa Barbara county, flash flooding and mudslides closed down Highway 101 at Bates Road. With such heavy rainfall, both the Santa Clara River and the Santa Ynez River exceeded their respective flood stages*. In the mountains of Ventura and Los Angeles counties, resort areas received between 3 and 4 feet of new snowfall. Preliminary damage estimates from this storm range between $8-10 million with agricultural interests in Ventura county accounting for most of the monetary damage.

2011 Flood- Severe winter storms, flooding, and debris and mudflows occurred from December 17, 2010 to January 4, 2011. The counties affected include: Inyo, Kern, Kings, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, and Tulare.

March 2011 Flood- A severe winter storm occurred in March 2011 that included flooding, debris and mudflows throughout Santa Barbara County.

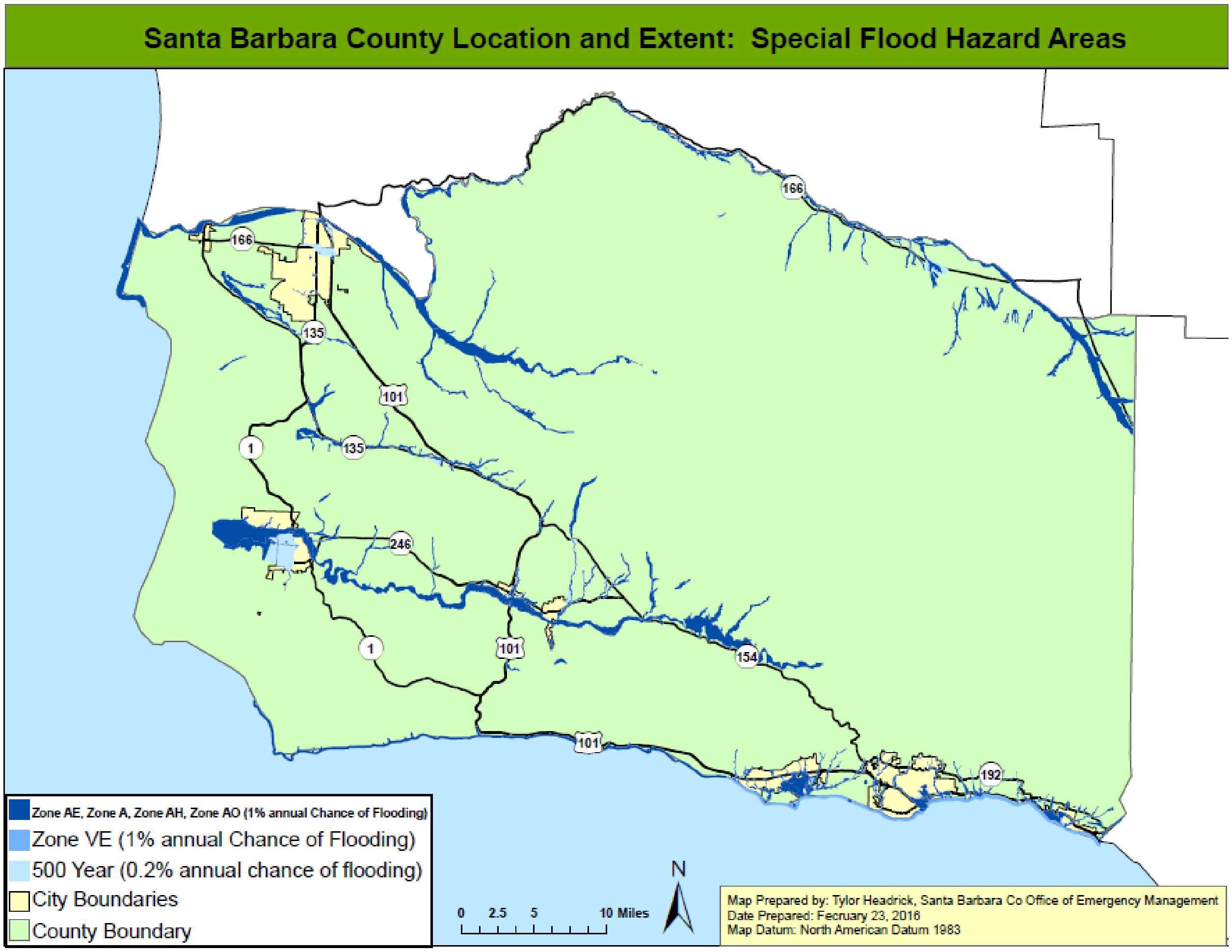
March 1st 2014- A strong winter storm caused significant damage to coastal properties on the south coast of Santa Barbara County

December 12, 2014 – A brief but intense rainfall, portions of which covered a limited area that exceeded a 200-year return period, caused damages county-wide, mostly in the form of downed trees, bank erosion and sediment and debris deposition.

5.4.1.4.4 Probability of Occurrence

The probability of flooding in Santa Barbara County is shown in **Figure 5.14**. The map shows the location of the special flood hazard zones in Santa Barbara County. The flood hazard zones depicted on the map are derived from FEMA's Flood Insurance Rate Maps (FIRM) and indicate the probability of flooding happening over a given period of time. Flood zones are geographic areas that defined varying levels of flood risk. Each zone reflects the severity or type of flooding in the area. The FIRM boundaries are developed by FEMA to convey flood risk.

Figure 5.14 Special Flood Hazard Area



Within the coastal special flood hazard area, there are two primary flood zones: Zone VE and Zone AE. Zone VE, also known as the Coastal High Hazard Area, has a wave component that is greater than three fee in height. Coastal Zone AE has a wave component of 0-3 feet in height.

This coastal study will result in floodplain mapping that is anticipated to become effective in 2018. Current indications are that the resulting base flood elevations will be several feet higher than the current flood mapping.

The following below describes the different flood hazard zones and their associated probabilities.

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or depths are shown within this zone. Mandatory flood insurance purchase requirements apply.

Zone AE and A1-A30

Zones AE and A1-A30 are the flood insurance rate zones that correspond to the 100-year floodplains that are determined in the FIS by detailed methods. In most instances, BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding with a constant water-surface elevation (usually areas of ponding) where average depths are between 1 and 3 feet. The BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. The depth should be averaged along the cross section and then along the direction of flow to determine the extent of the zone. Average flood depths derived from the detailed hydraulic analyses are shown within this zone. In addition, alluvial fan flood hazards are shown as Zone AO on the FIRM. Mandatory flood insurance purchase requirements apply.

Zone AR

Zone AR is the flood insurance rate zone used to depict areas protected from flood hazards by flood control structures, such as a levee, that are being restored. FEMA will consider using the Zone AR designation for a community if the flood protection system has been deemed restorable by a Federal agency in consultation with a local project sponsor; a minimum level of flood protection is still provided to the community by the system; and restoration of the flood protection system is scheduled to begin within a designated time period and in accordance with a progress plan negotiated between the community and FEMA. Mandatory purchase requirements for flood insurance will apply in Zone AR, but the rate will not exceed the rate for unnumbered A zones if the structure is built in compliance with Zone AR floodplain management regulations.

For floodplain management in Zone AR areas, elevation is not required for improvements to existing structures. However, for new construction, the structure must be elevated (or floodproofed for non-residential structures) such that the lowest floor, including basement, is a maximum of 3 feet above the highest adjacent existing grade if the depth of the base flood elevation (BFE) does not exceed 5 feet at the proposed development site. For infill sites, rehabilitation of existing structures, or redevelopment of previously developed areas, there is a 3 foot elevation requirement regardless of the depth of the BFE at the project site.

The Zone AR designation will be removed and the restored flood control system shown as providing protection from the 1% annual chance flood on the NFIP map upon completion of the restoration project and submittal of all the necessary data to FEMA.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 100-year floodplains that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No BFEs or depths are shown within this zone. Mandatory flood insurance purchase requirements apply.

Zone D

The Zone D designation on NFIP maps is used for areas where there are possible but undetermined flood hazards. In areas designated as Zone D, no analysis of flood hazards has been conducted. Mandatory flood insurance purchase requirements do not apply, but coverage is available. The flood insurance rates for properties in Zone D are commensurate with the uncertainty of the flood risk

Zone V

Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no BFEs are shown within this zone. Mandatory flood insurance purchase requirements apply.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply.

Zones B, C, and X

Zones B, C, and X are the flood insurance rate zones that correspond to areas outside the 100-year floodplains, areas of 100-year sheet flow flooding where average depths are less than 1 foot, areas of 100-year stream flooding where the contributing drainage area is less than 1 square mile, or areas protected from the 100-year flood by levees. No BFEs or depths are shown within this zone.

5.4.1.4.5 Climate Change Consideration

Climate change is both a present threat and a slow-onset disaster. It acts as an amplifier of existing hazards. Extreme weather events have become more frequent over the past 40 to 50 years and this trend is projected to continue. Rising sea levels, changes in rainfall distribution and intensity are expected to have a significant impact on coastal communities, including portions of Santa Barbara County. This section presents a discussion of how climate change might impact the frequency, intensity and distribution of flood hazards.

5.4.1.5 Drought and Water Shortages

5.4.1.5.1 Description of Hazard

Drought and water shortages are a gradual phenomenon and generally are not signified by one or two dry years. California's and Santa Barbara's extensive system of water supply infrastructure (reservoirs, groundwater basins, and interregional conveyance facilities) generally mitigates the effects of short-term dry periods for most water users. However, drought conditions are present when a region receives below-average precipitation, resulting in prolonged shortages in its water supply, whether atmospheric, surface, or ground water. A drought can last for months or years, or may be declared after as few as 15 days. Because of its unique geographical terrain and mediteranian climate, Santa Barbara County has not been in drought when there have been previous federal and state declarations. Conversly, Santa Barbara County is currently still in a drought emergency while the state of California is not. This recent drought emergency is the first local emergency declaration of drought in Santa Barbara County's history.

5.4.1.5.2 Location and Extent of Hazard in Santa Barbara County

The entire county is subject to drought conditions and water shortages. This is largly due to Lake Cachuma being the primary source of water for the whole county. Lake Cachuma primarily receives it water supply through precipitation run-off and has very limited access to state water resources. The extent of hazard is further articulated in the next passage.

5.4.1.5.3 History of Hazard in Santa Barbara County

The state of California and Santa Barbara have been in a drought since 2014. Recently, on April 7, 2017, Santa Barbara and the state, with a few exceptions declared the drought over. The average rainfall in Santa Barbara County is 17.6 inches; however, since 2016, Santa Barbara has experienced significantly less than normal rainfall. The effects of the drought are most visible when looking at the current capacity and maximum storage of the two main water reservoirs in the county, Lake Cachuma and Twitchell. On February 16, 2016, Cachuma was reported to be at 14.9% capacity, and Twitchell was at 0.2% capacity.

5.4.1.5.4 Probability of Occurrence

In any given year, Santa Barbara County can be subject to drought conditions and water shortages.

5.4.1.5.5 Climate Change Considerations

This entire section is dedicated to climate change hazards, and as such, is focused on climate change's effects on the community. However, it is important to highlight climate change's potential direct impact.

Climate change has the potential to make drought events more common in the West, including California. Extreme heat creates conditions more conducive for evaporation of moisture from the ground, thereby increasing the possibility of drought. A warming planet could lead to earlier melting of winter snow packs, leaving lower stream flows and drier conditions in the late spring and summer. Snow packs are important in terms of providing water storage and ensuring adequate supply in the summer, when water is most needed. Changing precipitation distribution and intensity have the potential to cause more of the precipitation that does fall to run-off rather than be stored. The result of these processes is an increased potential for more frequent and more severe periods of drought.

5.4.1.6 Sea Level Rise and Erosion

5.4.1.6.1 Description of Hazard

Sea level rise (SLR) is defined as the rising of the level of the sea as a result of the so-called greenhouse effect or global warming. SLR can occur through one or more of three (3) processes that include eustasy, isostasy, or thermal expansion. Erosion is a natural process which alters existing geomorphic features. Erosion can occur due to a number of factors, including winter storms, tidal action, wind-generated high surf, wave action, and rising sea levels.

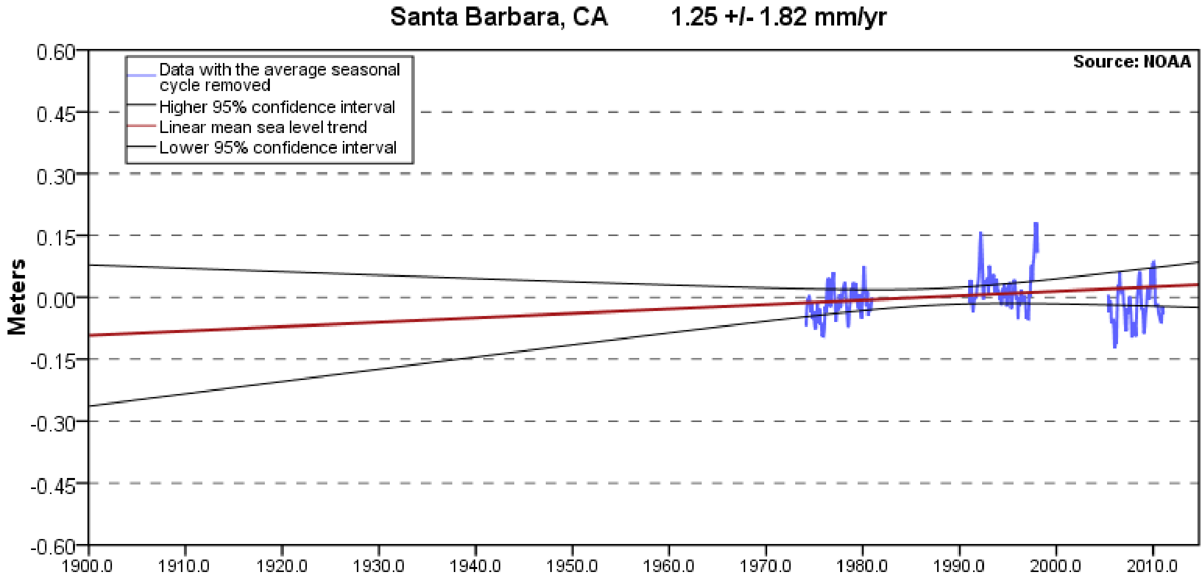
5.4.1.6.2 Location and Extent of Hazard in Santa Barbara County

The impacts from SLR and erosion in Santa Barbara County will be felt along its 110 mile long coastline. SLR coupled with increased frequency, severity, and duration of high tide and storm events related to climate change will result in more frequent and severe extreme events along the coast. These events could expose the coast to severe flooding and erosion, damage to coastal structures and real estate, and salinity intrusion into delta areas and coastal aquifers (Projecting Future Sea Level, A Report from the California Climate Change Center, 2006).

5.4.1.6.3 History of Hazard in Santa Barbara County

Typically, the highest sea level readings along California’s coastline occur during periods of heavy rain that coincide with high tides, causing coastal flooding, coastal bluff erosion, and landslides such as were experienced during the 1998 El Nino storms. Sea levels are already rising along the Santa Barbara County coastline as is evident in long term tidal gauge records from Station 9411340 since 1973 (**Figure 5.15**).

Figure 5.15 Mean Sea Level Trend in Santa Barbara



In addition to SLR occurrence, below are several bridges throughout the County that are known to experience scour during flooding erosion events:

North County

- Foothill (Cuyama)
- Jalama Road at Ramajal Creek (Bridge No 51C-0016) is listed as Scour Critical, with Unstable Foundation

South County

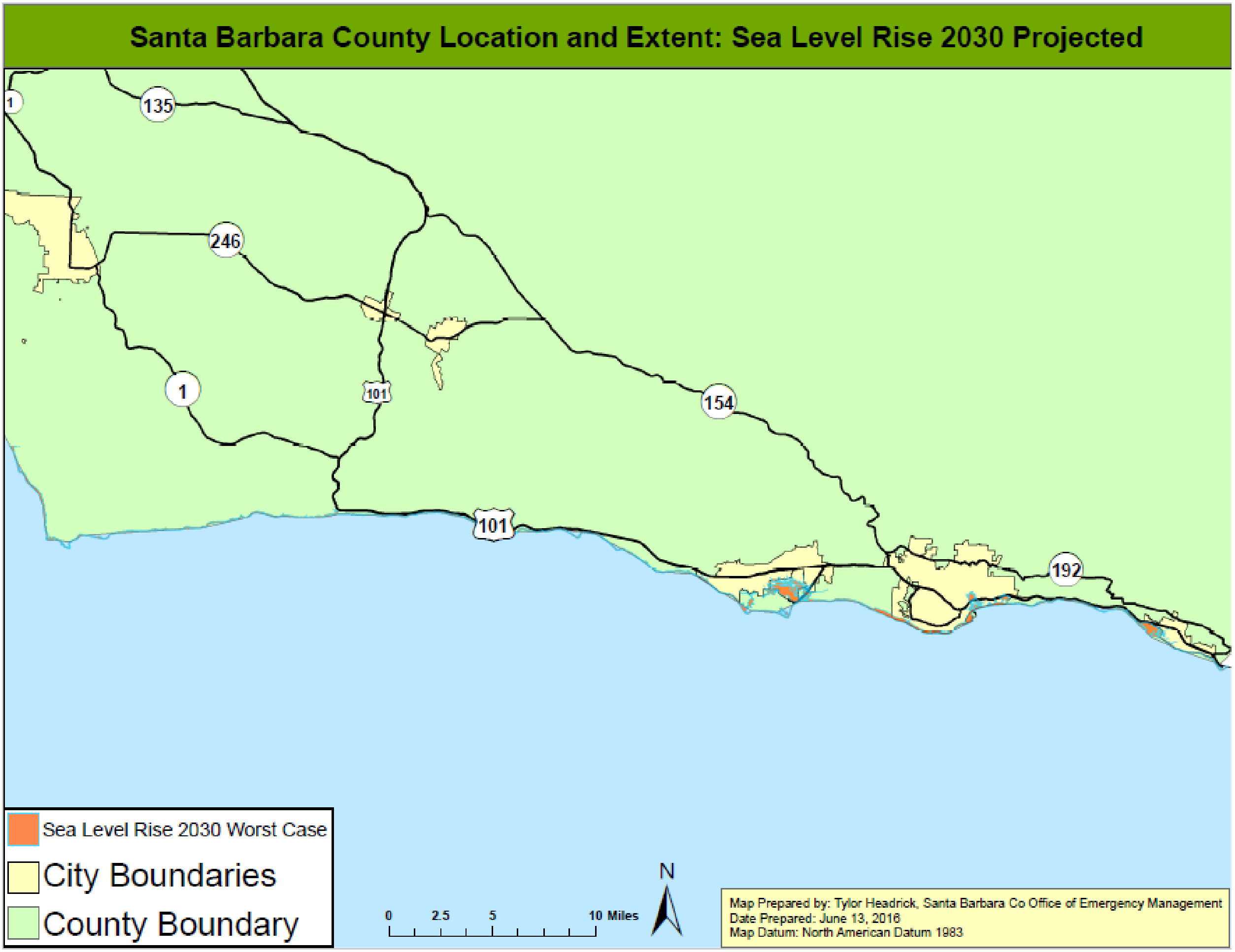
- East Mountain Drive at San Ysidro Creek (Bridge No 51C-0202) is listed as Scour Critical, with Extensive Foundation Scour
- Ashley Road at Montecito Creek (Bridge No 51C-0043) is listed as Scour Critical, with Extensive Foundation Scour

5.4.1.6.4 Probability of Occurrence

As discussed above, the potential impacts of global warming and climate change include increased opportunities for severe weather that may result in sea level rise and erosion. Santa Barbara County's land mass includes more than 110 miles of coastline with varying geologic features including steep coastal bluffs, beaches, wetlands, bays, and deltas. It also supports varying levels of development and land use, including recreational, agricultural, industrial, commercial, and residential.

A growing consensus of scientists believes that sea level rise will continue and the rate of rise will increase. The Intergovernmental Panel on Climate Change (IPCC) suggests that global SLR on the order of 0.2 m (0.66 ft.) and 0.6 m (1.97 ft.) is possible by 2100 with other scientists indicating this rise could be over 1 meter (3.28 ft.). **Figure 5.16** depicts areas (dark blue along and near the Santa Barbara County coastline that may be vulnerable to sea level rise.

Figure 5.16 Sea Level Rise Santa Barbara Quadrangle



5.4.1.6.5 Climate Change Considerations

This entire section is dedicated to climate change hazards, and as such, is focused on climate change's effects on the community. However, it is important to highlight climate change's potential direct impact.

As mentioned above, SLR can be caused by three (3) different processes. Two (2) of which, melting of ice sheets and/or thermal expansion of water, are a result of climate change and/or global warming

Erosion can be increased by climate change in two (2) ways. First, sea level rise, over time, will cause more rapid erosion of more inland areas than in previous years. This will be chronic erosion, however it will reach new, more inland areas, in the future due to higher average sea levels. Secondly, while the topic of increased frequency of storms is up in debate, if more severe or frequent storms do occur, it will increase coastal erosion events. More frequent storms will impact how frequently acute coastal erosion events occur, while more intense events will cause the erosion to extend further inland than before.

5.4.1.7 Energy Shortage and Resiliency

5.4.1.7.1 Description of Hazard

Energy shortages (or disruptions) are considered a form of lifeline system failure. Disruptions can be the consequence of another hazard, or can be a primary hazard, absent of an outside trigger. A failure could involve one, or a combination of the potable water system, power system, natural gas system, wastewater system, communication system, or transportation system. Most power blackouts are not human caused. They are the result of situations involving unintended events, such as an overwhelming need for power due to weather conditions, equipment failure, or accidents. They may also fail due to natural hazards such as earthquakes, floods, and landslides. These outages can last anywhere from a few minutes to several weeks.

Santa Barbara County has two service providers. Pacific Gas and Electric (PG&E) provides electricity in the northern part of the County, with termination of services north of the Gaviota area. Southern California Edison (SCE) provides power to the Southern parts of the County, with termination of services in Gaviota. The two systems are not connected. Thus, is there is a major interruption of service in the Santa Barbara area, then all serviced could be denied in either direction.

Both power companies are well aware of the restrictions on their systems and are making planned systematic changes to address the shortcomings. SCE has temporarily deployed several portable generators in the Goleta Valley to mitigate any problems that may occur during the El Nino rain season.

5.4.1.7.2 Location and Extent of Hazard in Santa Barbara County

The entire county is subject to energy shortages.

5.4.1.7.3 History of Hazard in Santa Barbara County

Energy disruptions on a small scale have occurred on a regular basis in Santa Barbara County.

5.4.1.7.4 Probability of Occurrence

In any given year, Santa Barbara County can be subject to energy shortages. A large disruption due to a power failure or rotating brown out highly likely.

5.4.1.7.5 Climate Change Considerations

With increased changes in weather and climate, the demands on energy will shift too. This shift in demand could have significant impacts on energy supply and demand.

5.4.1.8 Oil Spills

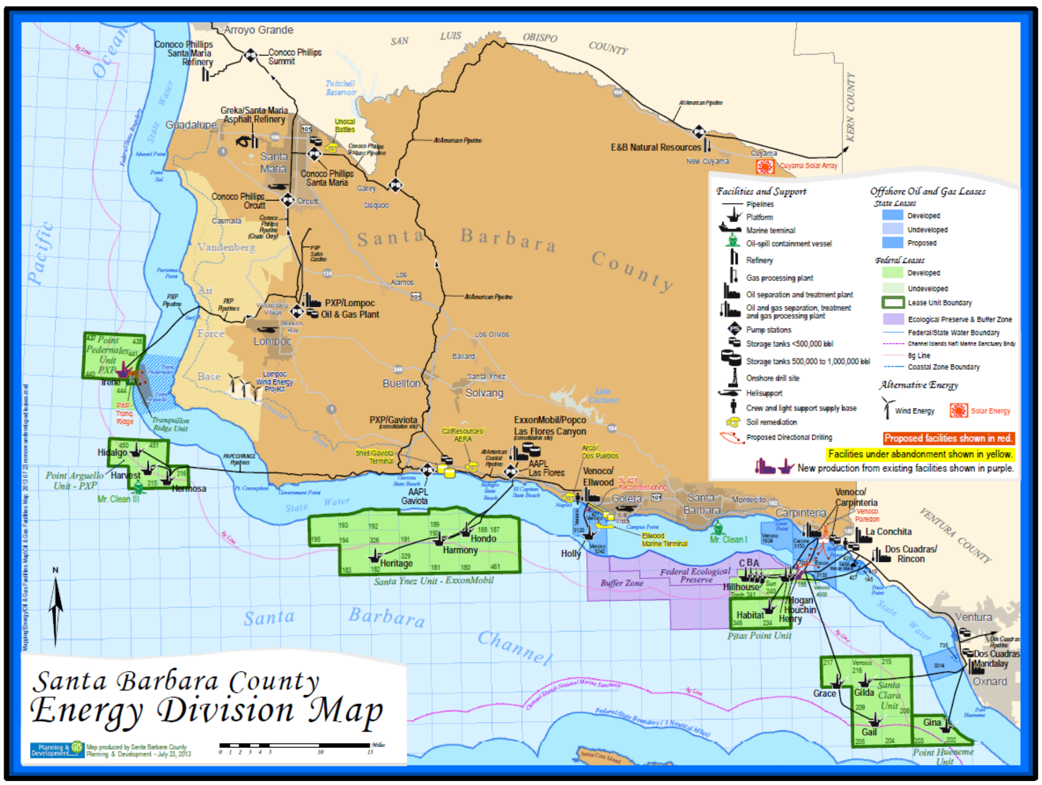
5.4.1.8.1 Description of Hazard

An oil spill is a release of liquid petroleum hydrocarbon into the environment due to human activity or technological error that results in pollution of land, water, and air. Oil releases also occur naturally through oil seeps either on land or under water. Marine oil spills, whether accidental or intentional, can result from the release of crude oil from offshore oil platforms, drilling rigs, wells, underwater pipelines, tank trucks, and marine tank vessels (tankers) and even supply pipelines on land. Refined petroleum products such as gasoline, diesel, and heavier fuels such as bunker fuel used by cargo ships are also sources of potential oil spill releases. Depending on the origin, size, and duration of the release, an oil spill can have serious impacts on air and water quality, public health, plant and animal habitat, and biological resources. Clean up and recovery is time and cost consuming, and dependent on weather conditions such as wind and rain. Tidal and Current conditions may also make the spill more dynamic.

5.4.1.8.2 Location and Extent of Hazard in Santa Barbara County

This hazard can occur in any part of Santa Barbara County where existing oil & gas operations are located, either on-shore through supply pipelines and well facilities or off-shore where there are several platforms and undersea pipelines. Currently, there are 11 Oil Platforms off of the Santa Barbara County Coast and approximately 2457 oil and gas wells in Santa Barbara County. **Figure 6.12** show the Oil Platforms and their proximity to Santa Barbara.

Figure 6.18 Oil Platform Map of Santa Barbara Coast



5.4.1.8.3 History of Hazard in Santa Barbara County

Santa Barbara County has experienced the following large oil spills:

- January 28, 1969 Platform A - 80,000 to 100,000 barrels
- September 28, 1997 Platform Irene - 163 barrels

- May 19, 2015 Pipeline 901 at Refugio - 3,400 barrels

5.4.1.8.4 Probability of Occurrence

In any given year, Santa Barbara County could be subject to oil spills onshore or offshore.

5.4.1.8.5 Climate Change Considerations

With increased changes in weather, climate, and economics, the demands for oil & gas production may shift. This shift in demand could increase production, distribution, and transportation of oil products; thus increasing the potential oil spill occurrences.

5.4.2 Lower Priority Hazards of Interest

5.4.2.1 Severe Weather and Storms

This section assesses hazards that are related to climate and weather. NASA defines weather as the way the atmosphere is behaving, mainly with respect to its effects upon life and human activities. The difference between weather and climate is that weather consists of the short-term (minutes to months) changes in the atmosphere. Most people think of weather in terms of temperature, humidity, precipitation, cloudiness, brightness, visibility, wind, and atmospheric pressure, as in high and low pressure. In most places, weather can change from minute-to-minute, hour-to-hour, day-to-day, and season-to season. Climate, however, is the average of weather over time and space. Fifty-eight long-term changes in the climate, especially those driven by the accumulation of anthropogenic greenhouse gases in the atmosphere, are expected to change short-term weather patterns and thus change weather-related impacts, both short- and long-term. Most prominently, climate change is warming the average global temperatures, which will result in more frequent and intense extreme events related to changes in temperature and precipitation, such as heat waves, flooding.

In the State Hazard Mitigation Plan, climate change is treated as a condition that will change and potentially exacerbate the impact of other hazards rather than being treated as a distinct hazard with unique impacts. For example, extreme heat and heat waves is an existing hazard that will be exacerbated by climate change. Impacts of climate change on the frequency, timing, and magnitude of flooding varies with the geography throughout the state. Areas that experience early run off from snow melt coupled with intensified rain or coastal areas experiencing sea level rise may be more greatly impacted by flooding. Hazards that have the potential to be affected by climate change are grouped in this subsection.

5.4.2.1.1 Extreme Heat

5.4.2.1.1.1 Description of Hazard

Extreme Heat is a function of heat and relative humidity. A Heat Index describes how hot the heat-humidity combination makes the air feel. As relative humidity increases, the air seems warmer than it actually is because the body is less able to cool itself via evaporation of perspiration. As the Heat Index rises, so do health risks such as heat exhaustion, sunstroke, and heatstroke. Some Heat Index Program Alert procedures are implemented when the high temperature is expected to exceed 105° to 110° (depending on local climate) for at least two consecutive days.

5.4.2.1.1.2 *Location and Extent of Hazard in Santa Barbara County*

The entire county is subject to extreme heat conditions, particularly inland areas.

5.4.2.1.1.3 *History of Hazard in Santa Barbara County*

Santa Barbara County has experienced several extreme heat events in the past; however, they are not well documented. One documented event, Simoon, occurred in June 17, 1859 where a U.S. Coast Guard vessel recorded a record temperature of 133 degrees Fahrenheit in Goleta during a sundowner event on the Santa Barbara coast. This event set the world record for hottest temperature ever recorded on Earth, which held for 75 years until the record was broken by one degree in Death Valley, and then again in 1922 in Libya.

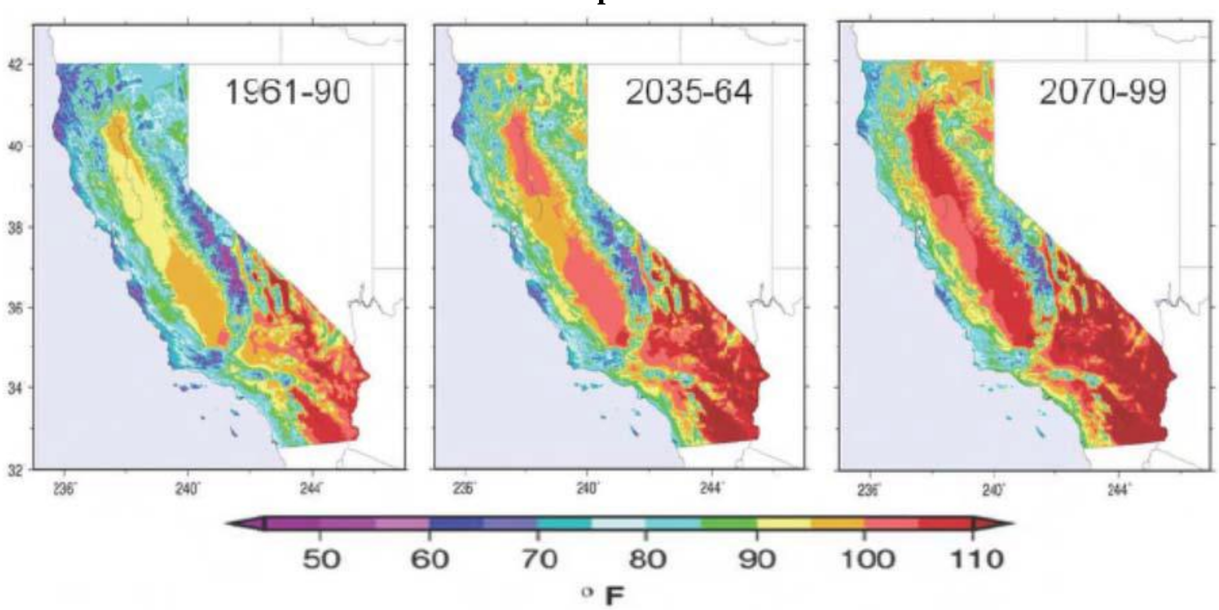
5.4.2.1.1.4 *Probability of Occurrence*

In any given year, Santa Barbara County can be subject to extreme heat conditions.

5.4.2.1.1.5 *Climate Change Considerations*

As temperatures rise due to climate change, Californians will face greater risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat. By mid-century, extreme heat events in urban centers could cause two to three times more heat-related deaths than occur today. By 2100, hotter temperatures are expected throughout the state, with an increase of 3 to 5.5°F under the lower emissions scenario and 8 to 10.5°F under the higher emissions scenario (**Figure 5.17**).

Figure 5.17 Comparison between Historic and Projected Temperature



5.4.2.1.2 Freeze

5.4.2.1.2.1 Description of Hazard

Freeze conditions are noted when there are sustained temperatures below 32 degree farenheit or below.

5.4.2.1.2.2 Location and Extent of Hazard in Santa Barbara County

The entire county is subject to freeze conditions; however, they are more prevalent with inland areas.

5.4.2.1.2.3 History of Hazard in Santa Barbara County

There have been two federally declared freeze events in Santa Barbara County. The first occurred from December 19, 1990 through January 3, 1991 and was federally declared on February 11, 1991. The second occurred from January 11, 2007 through Janary 17, 2007 and was federally declared on March 13, 2007.

5.4.2.1.2.4 Probability of Occurrence

In any given year, Santa Barbara County can be subject to freeze conditions.

5.4.2.1.2.5 Climate Change Considerations

Freezing spells are likely to become less frequent as climate temperatures increase; if emissions follow higher pathways, freezing events could occur only once per decade in a sizable portion of the state by the second half of the 21st century.

5.4.2.1.3 Hailstorm

5.4.2.1.3.1 Description of Hazard

Hail is a type of precipitation in the form of pellets or balls of ice more than .19 inches in diameter. Out of all the types of Severe Weather, hail can pose the highest risk to the economy of the county with respect to crop and property damage.

5.4.2.1.3.2 Location and Extent of Hazard in Santa Barbara County

The entire county is subject to hailstorms; however, they are more prevelant with inland areas.

5.4.2.1.3.3 History of Hazard in Santa Barbara County

There is no current record of a hailstorm in the County.

5.4.2.1.3.4 Probability of Occurrence

In any given year, Santa Barbara County can be subject to hailstorm condition.

5.4.2.1.3.5 *Climate Change Considerations*

Hailstorms have the possibility of becoming more frequent with the climate temperatures increasing, and the atmosphere becomes more convective.

5.4.2.1.4 Hurricanes

5.4.2.1.4.1 *Description of Hazard*

A hurricane is an example of a tropical cyclone; they can be up to 600 miles across and have wind speeds between 75 to 200 miles per hour. Each hurricane usually lasts for over a week, moving 10-20 miles per hour over the open ocean. Hurricanes gather heat and energy through contact with warm ocean waters; Hurricanes only form over really warm ocean water of 80°F or warmer. Evaporation from the seawater increases their power. Hurricanes rotate in a counter-clockwise direction around an "eye" in the Northern Hemisphere and clockwise direction in the Southern Hemisphere. The center of the storm or "eye" is the calmest part.

Hurricanes also develop in stages; working their way up to hurricane status:

Tropical Wave	A low pressure trough moving generally westward with the trade winds.
Tropical Disturbance	An organized area of thunderstorms that usually forms in the tropics. Typically, they maintain their identity for 24 hours and are accompanied by heavy rains and gusty winds.
Tropical Cyclone	A generic term for any organized low pressure that develops over tropical and sometimes sub-tropical waters. Tropical depressions, tropical storms, and hurricanes are all example of tropical cyclones.
Tropical Depression	An organized area of low pressure in which sustained winds are 38 mph or less.
Tropical Storm	A tropical cyclone with maximum sustained wind speeds that range from 39 to 73 mph.
Hurricane	A tropical cyclone with sustained winds of at least 74 mph.

Hurricanes are categorized by characteristics (winds, pressure, and damage):

Category	Winds (MPH)	Pressure (Millibars)	Pressure (Inches)	Storm Surge (Feet)	Damage
1	74-95	<980	<28.94	4'-5'	Minimal
2	96-110	979-965	28.91-28.50	6'-8'	Moderate
3	111-130	964-945	28.47-27.91	9'-12'	Extensive
4	131-155	944-920	27.88-27.17	13'-18'	Extreme
5	>155	<920	<27.17	>18'	Catastrophic

5.4.2.1.4.2 *Location and Extent of Hazard in Santa Barbara County*

Although highly unlikely, the entire county is subject to be hit by a hurricane.

5.4.2.1.4.3 *History of Hazard in Santa Barbara County*

No significant hurricanes have hit Santa Barbara County. This is largely due to the fact that tropical storm winds generally blow from east to west and the waters off the coast of Santa Barbara are cooler in nature.

5.4.2.1.4.4 *Probability of Occurrence*

Although possible, Santa Barbara County is at very low risk of experiencing a significant hurricane event.

5.4.2.1.4.5 *Climate Change Considerations*

Because climate change effects are still being studied it is difficult to say if changing climate conditions will increase the chance of a significant hurricane impacting Santa Barbara County in the future.

5.4.2.1.5 Tornadoes

5.4.2.1.5.1 *Description of Hazard*

A tornado is a violent rotating column of air extending from cloud to ground. The most violent tornadoes are capable of tremendous destruction with wind speeds of up to 300 mph. They can destroy large buildings, uproot trees and throw vehicles hundreds of yards. They can also drive straw into trees. Damage paths can be in excess of one mile wide to 50 miles long.

Most tornadoes form from thunderstorms. They need warm, moist air from the Gulf of Mexico and cool, dry air from Canada. When these two air masses meet, they create instability in the atmosphere. A change in wind direction and an increase in wind speed with increasing height creates an invisible, horizontal spinning effect in the lower atmosphere. Rising air within the updraft tilts the rotating air from horizontal to vertical. An area of rotation, 2-6 miles wide, now extends through much of the storm. Most strong and violent tornadoes form within this area of strong rotation.

Tornadoes are measured by the Fujita Tornado Scale which classifies tornadoes by intensity categories, based on the maximum winds occurring within the funnel.

Category	Wind Speed	Description
F0	40-72 miles per Hour	Gale Tornado. Light Damage: Some damage to chimneys; breaks twigs and branches off trees; pushes over shallow-rooted trees; damages signboards; some windows broken; hurricane wind speed begins at 73 miles per hour.
F1	73-112 miles per hour	Moderate Tornado. Moderate Damage: Peels surfaces off roofs; mobile homes pushed off foundations or overturned; outbuildings demolished; moving autos pushed off the

		roads; trees snapped or broken.
F2	113-157 miles per hour	Significant Tornado. Considerable Damage: Roofs torn off frame houses; mobile homes demolished; frame houses with weak foundations lifted and moved; boxcars pushed over; large trees snapped or uprooted; light-object missiles generated.
F3	158-206 miles per hour	Severe Tornado. Severe Damage: Roofs and some walls torn off well constructed houses; trains overturned; most trees in forests uprooted; heavy cars lifted off the ground and thrown; weak pavement blown off roads.
F4	207-260 miles per hour	Devastating Tornado. Devastating Damage: Well-constructed homes leveled; structures with weak foundations blown off some distance; cars thrown and disintegrated; large missiles generated; trees in forest uprooted and carried some distance away.
F5	261-318 miles per hour	Incredible Tornado. Incredible Damage: Strong frame houses lifted off foundations and carried considerable distance to disintegrate; automobile-sized missiles fly through the air in excess of 300 feet (100 meters); trees debarked; incredible phenomena will occur.
F6-12	>319 miles per Hour	The maximum wind speeds of tornadoes are not expected to reach the F6 wind speeds.

5.4.2.1.5.2 *Location and Extent of Hazard in Santa Barbara County*

Although highly unlikely, the entire county is subject to be hit by a tornado.

5.4.2.1.5.3 *History of Hazard in Santa Barbara County*

Santa Barbara County has experienced waterspouts (weaker tornadoes that form over water) and microburst (sinking air) but it has not experienced any significant tornadoes. As comparison, the state of California has experienced 316 tornadoes between 1950 and 2006; however, not of them have required a state and/or federal declaration. Of the 316, 2 reach F3; 22 reach F2, 84 were F1, and 208 were F0.

5.4.2.1.5.4 *Probability of Occurrence*

Although possible, Santa Barbara County is at very low risk of experiencing a significant tornado event.

5.4.2.1.5.5 *Climate Change Considerations*

Because climate change effects are still being studied it is difficult to say if changing climate conditions will increase the chance of a significant tornado impacting Santa Barbara County in the future.

5.4.2.1.6 Windstorm

5.4.2.1.6.1 *Description of Hazard*

Santa Barbara County is predominately known to have damaging hot winds known as Sundowners. These winds can reach up to 80 mph and fuel raging wildfires on the south coast. Sundowner events are most prevelant in the Spring and Summer months, but can strike at any time of the year. Their greatest frequency is typically in the late afternoon and early evening hours. Sundowner winds occur as a strong north-south pressure gradient developing between the central coast and the Los Angeles Basin, thus causing gusty north winds to blow over the Santa Ynez Mountain range and decending to down towards the water. As the winds come up and over the mountain, they warm and dry the air (which is typically cool and moist along the coast) and gain speed coming down through the passes and coastal canyons causing a high speed of wind.

Santa Barbara County can occasionally experience Santa Ana winds, which are warm, dry, and can exceed 40 mph. Santa Ana's are most prevelant in the autumn and winter months. These winds originate from cool, dry high pressure air masses in the Great Basin. They come up, over and are pulled southward down the eastern side of the Sierra Nevadas and into the Southern California region.

5.4.2.1.6.2 *Location and Extent of Hazard in Santa Barbara County*

All of Santa Barbara County is susceptible to Sundowner windstorms and south county is minimally susceptible to Santa Anas.

5.4.2.1.6.3 *History of Hazard in Santa Barbara County*

Sundowner winds have a complex history in Santa Barbara County. They have caused Extreme Heat bringing record breaking temperatures to the area (such as the Simoon event in Goleta in 1859), as well as exacerbating fire weather and expanding already burning brush fires (such as the Painted Cave Fire in 1990, Gap and Tea Fire in 2008, Jesusita Fire in 2009, and Sherpa Fire in 2016). Beyond extreme heat and dangerous fire weather conditions, Sundowner winds can cause damage to critical infrastructure, crop and agriculture, and personal property.

5.4.2.1.6.4 *Probability of Occurrence*

Santa Barbara County is at risk of windstorms at any given time during the calender year.

5.4.2.1.6.5 *Climate Change Considerations*

Climate change effects, although still being studied, will have an affect on sundowner and santa ana windstorms in the future.

5.4.2.2 Dam Failure

5.4.2.2.1 Description of Hazard

Dams fail due to old age, poor design, structural damage, improper siting, landslides flowing into a reservoir, or terrorist actions. Structural damage is often a result of a flood, erosion, or earthquake. A catastrophic dam failure could inundate the area downstream. The force of the water is large enough to carry boulders, trees, automobiles, and even houses along a destructive path downstream. The potential for casualties, environmental damage, and economic loss is great. Damage to electric generating facilities and transmission lines could impact life support systems in communities outside the immediate hazard area.

5.4.2.2.2 History of Hazard in Santa Barbara County

The State of California and the federal government have a rigorous Dam Safety Program. This is a proactive program that ensure proper planning in the event of failure but also sets standards for dam design and maintenance. Because of this, many potential issues have been addressed and/or resolved. Prior to the implementation of this program Santa Barbara did experience a dam related incident.

Built in 1917, the Sheffield Dam only survived for eight years, failing catastrophically during an earthquake in 1925. It was built on sandy soil which liquefied during the event. The center 300-feet of the 720-feet long dam broke off and was carried away on the liquefied soil, spilling 30 million gallons of water. Damage estimates are unavailable.

5.4.2.2.3 Location and Extent of Hazard in Santa Barbara County

There are 15 dams in the County. These dams range in purpose from water supply to flood control. Dam failure inundation zones mapped by the State of California indicate areas that would be inundated should a dam fail catastrophically. The inundation mapping is considered confidential by the State of California. **Figure 5.18 and Figure 5.19** display the dam locations and dam inundation areas.

Figure 5.19 Dam Locations

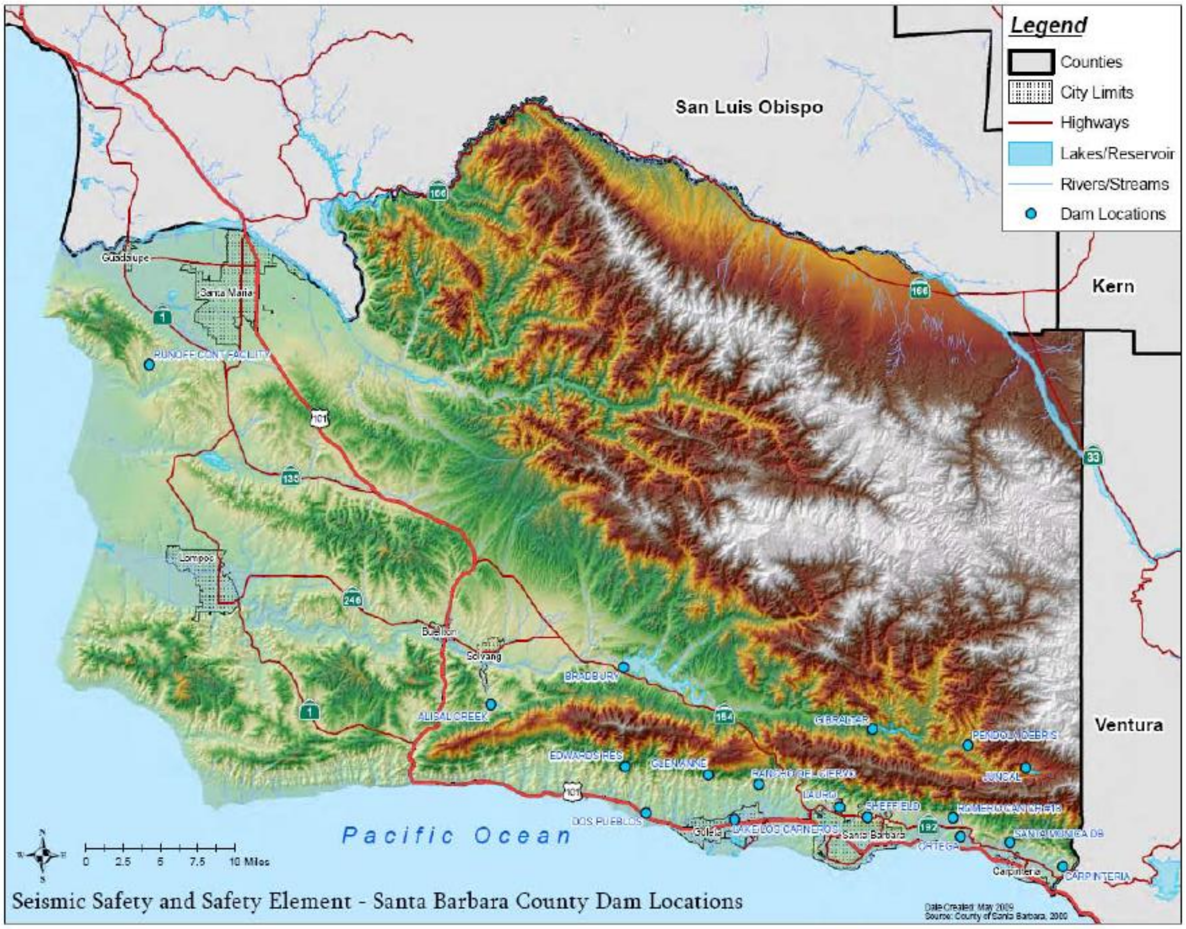
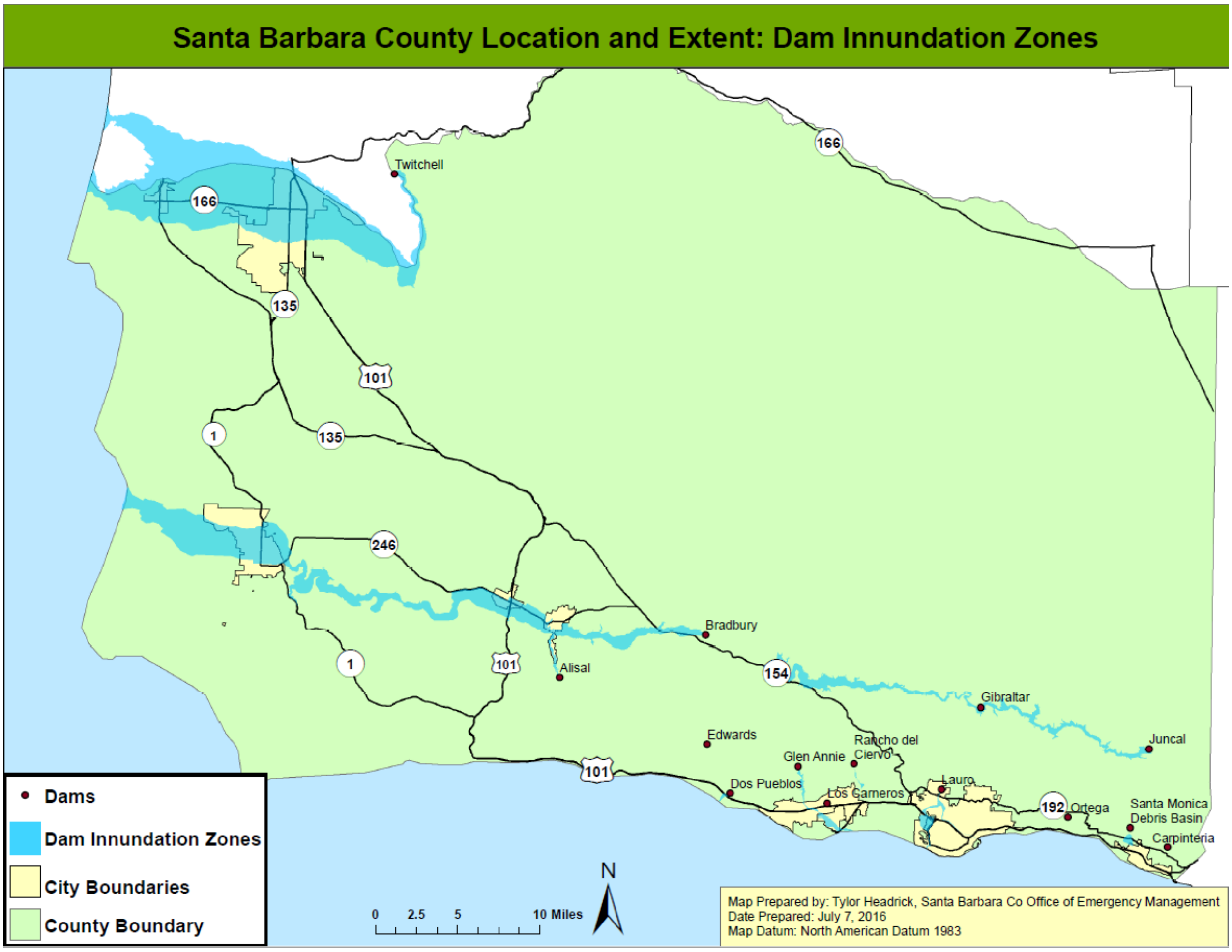


Figure 5.20 Dam Inundation Zones



5.4.2.2.4 Probability of Occurrence

Dam failure events are infrequent and usually coincide with the events that cause them, such as earthquakes, landslides and excessive rainfall and snowmelt. There is a “residual risk” associated with dams; residual risk is the risk that remains after safeguards have been implemented. For dams, the residual risk is associated with events beyond those that the facility was designed to withstand. However, the probability of occurrence of any type of dam failure event is considered to be low in today’s regulatory and dam safety oversight environment.

5.4.2.2.5 Climate Change Considerations

Increased rainfall from changing climate conditions could present a risk to dams in Santa Barbara County if volume of runoff is greater than the dam’s capacity. This could cause the County to release stored water into the downstream water courses in order to ensure the integrity of the dam.

5.4.2.3 Agricultural Pests

5.4.2.3.1 Description of Hazard

Agricultural pests and disease infestation occur when an undesirable organism inhabits an area in a manner that causes serious harm to agriculture crops, livestock or poultry, and wild land vegetation or animals. Countless insects and diseases live on, in, and around plants and animals in all environments. Most are harmless, while some can cause significant damage and loss. Under some conditions, insects and diseases that have been relatively harmless can become hazardous. For example, severe drought conditions can weaken trees and make them more susceptible to destruction from insect attacks than they would be under normal conditions.

5.4.2.3.2 History of Hazard in Santa Barbara County

Santa Barbara County has a demonstrated vulnerability to insect infestation. Infestations of Mediterranean Fruit Fly, Oriental Fruit Fly, Gypsy Moth, Glassy-winged Sharpshooter, Asian Citrus Psyllid, and Light-Brown Apple Moth have all occurred in the last 30 years. Diseases such as Chrysanthemum White Rust and Pierce's Disease of Grapes have caused significant losses to local growers.

5.4.2.3.3 Location and Extent of Hazard in Santa Barbara County

Figure 5.20 shows land that, under the Williamson Act, has been zoned as agricultural, open space, or recreational. These lands are susceptible to agricultural pests and diseases. **Figure 5.21** portrays crop land. These areas are also susceptible to agricultural pests and diseases.

Figure 5.21 Agricultural Fields

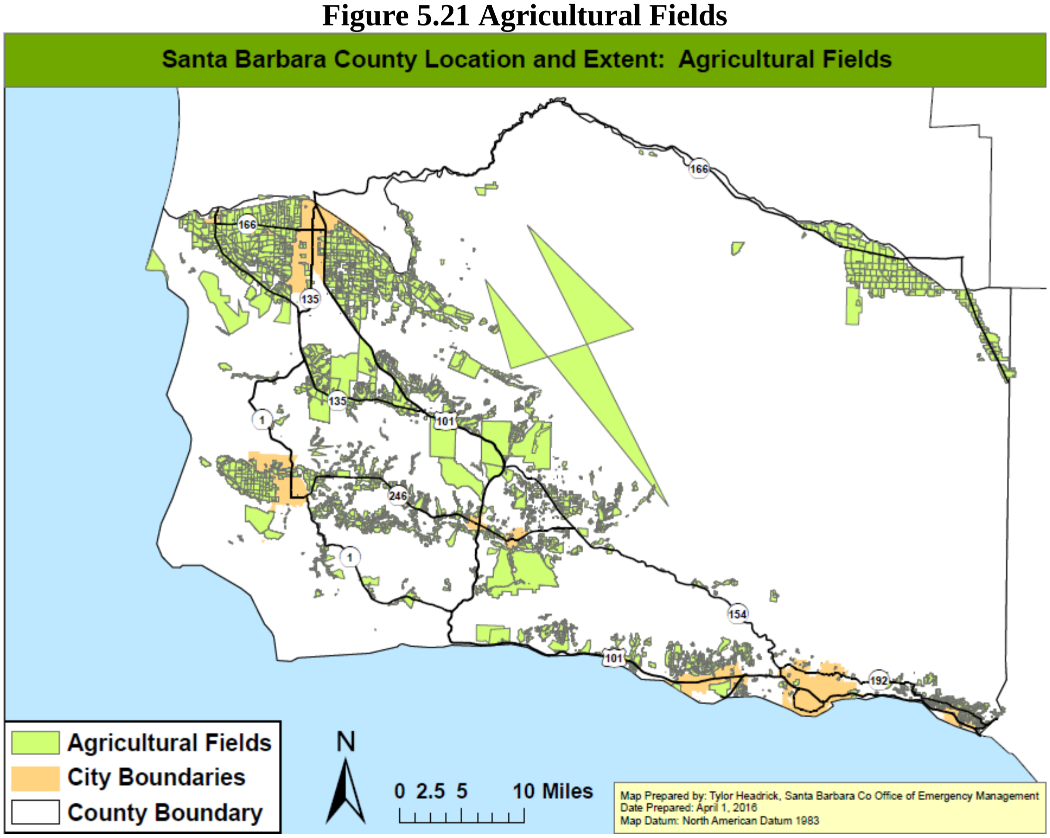
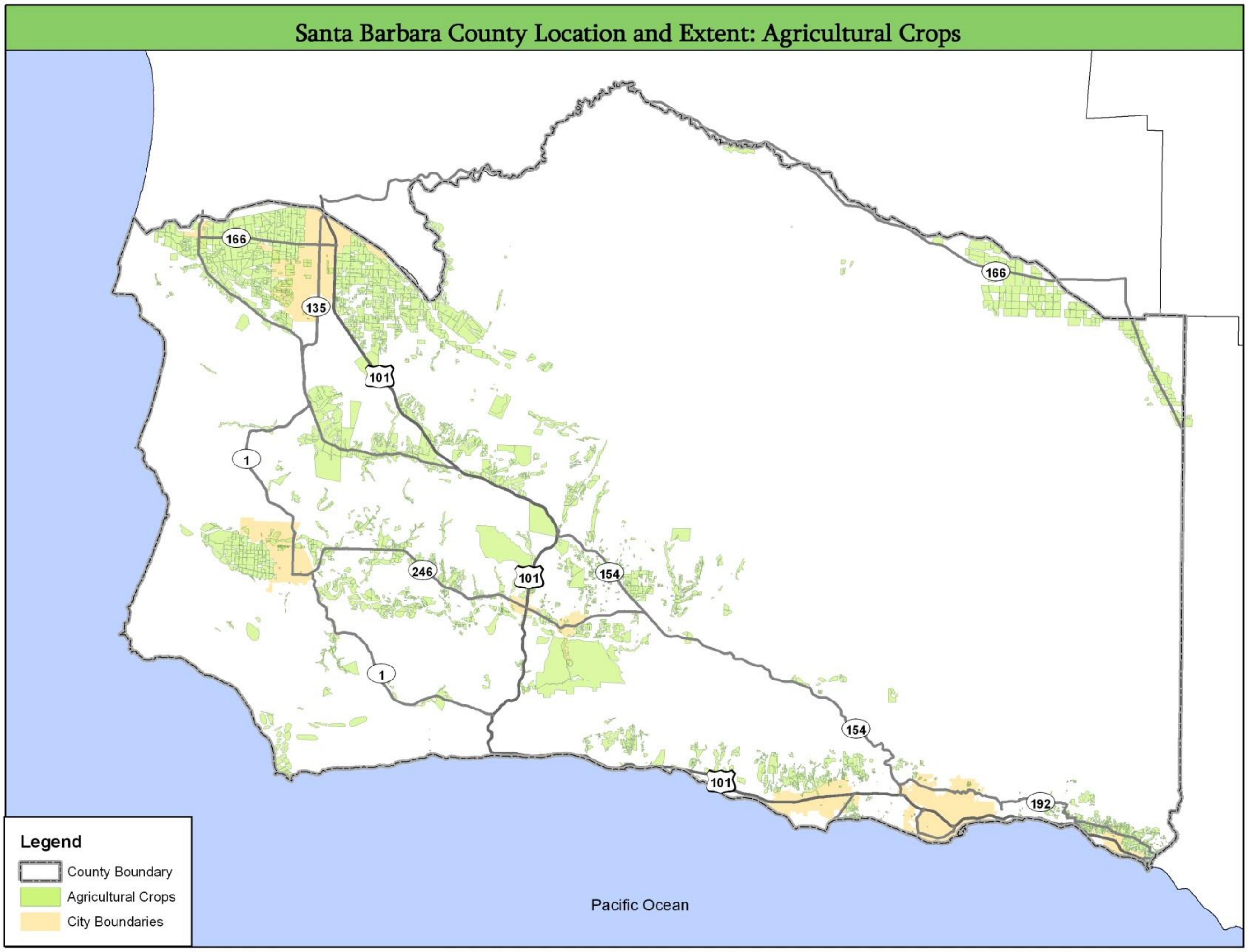


Figure 5.22 Agricultural Crops



5.4.2.3.4 Probability of Occurrence

Due to its interaction with the global economy, its mild Mediterranean climate, and its diversified agricultural and native landscape, Santa Barbara County currently experiences and will continue to experience periodic losses due to agricultural pests and diseases.

5.4.2.3.5 Climate Change Consideration

California farmers contend with a wide range of crop-damaging pests and pathogens. Continued climate change is likely to alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates. For example, the pink bollworm, a common pest of cotton crops, is currently a problem only in southern desert valleys because it cannot survive winter frosts elsewhere in the state. However, if winter temperatures rise 3 to 4.5°F, the pink bollworm's range would likely expand northward, which could lead to substantial economic and ecological consequences for the state.

Temperature is not the only climatic influence on pests. For example, some insects are unable to cope in extreme drought, while others cannot survive in extremely wet conditions. Furthermore, while warming speeds up the lifecycles of many insects, suggesting that pest problems could increase, some insects may grow more slowly as elevated carbon dioxide levels decrease the protein content of the leaves on which they feed (California Climate Change Center 2006).

5.4.2.4 Epidemic/Pandemic/Vector Borne Disease

5.4.2.4.1 Description of Hazard

Infectious disease emergencies are circumstances caused by biological agents, including organisms such as bacteria, viruses or toxins, with the potential for significant illness or death in the population.

Infectious disease emergencies may be caused by:

- Naturally occurring diseases spread person to person (e.g., measles, mumps, meningococcal disease, tuberculosis)
- Foodborne (e.g.: salmonella, Ecoli, botulinum toxin, etc.)
- Vectors such as a mosquito that spread disease (e.g.: West Nile virus, dengue, Zika, malaria).
- Newly emerging infectious diseases (e.g.: Ebola, Zika, SARS, MERS, avian influenza).
- Intentionally caused spread of disease or toxins known as bioterrorism. Past bioterrorism events include the contamination of restaurant food with Ecoli in Oregon (1984) and the release of Sarin gas in the Tokyo subway (1995).

The impact of infectious disease emergencies on the local community and its critical infrastructure will depends on:

- The type of biological agent and availability of treatment for victims
- The availability of prophylaxis for responders and the public
- The scale of exposure and ongoing exposure
- The mode of transmission and whether transmission can be interrupted
- Whether the event is affecting staffing for critical infrastructure within and outside of the county such as transportation, law enforcement, health care, and the medical and food supply chains.

Outbreaks, Epidemics, and Pandemics

An **outbreak** is when there are more cases than would be normally expected, often suddenly, of an infectious disease in a community or facility.
An **epidemic** is when there are more cases than would be normally expected of an infectious disease, often suddenly, in a population of a large geographic area.
A **pandemic** refers to an epidemic that has spread over several countries or continents, usually affecting a large number of people. Examples include pandemic influenza and Severe Acute Respiratory Syndrome or “SARS”.

Outbreaks, epidemics, or pandemics can occur when a new virus emerges to which the population has little immunity. The 20th century saw three such pandemics, the most notable of which was the 1918 Spanish influenza pandemic that was responsible for 20 million deaths throughout the world. Secondary impacts include significant economic disruption to a community’s infrastructure due to loss of employee work time, essential services and products, and costs of treating or preventing spread of the disease.

Public health measures are used to control outbreaks, epidemics, or pandemics of infectious diseases, and are especially important for diseases with high morbidity or mortality and limited medical prophylaxis and/or rapid treatment.

Measures to control disease include:

- Legal measure such as isolation and quarantine of persons or products, and legal closure of food establishments.
- Control of contaminated food or water through recall of product or, for water, "Do Not Use", "Do Not Drink" or "Boil Water" orders issued by state or local health departments.

Vector control to eliminate vectors such as mosquitos that carry the disease from person to person. The Vector Borne Disease Section of the California Department of Public Health reports risk or potential risk of exposure to the following vector borne disease in California:

Typhus	Tulermia	Hantavirus Cardiopulmonary Syndrome
Plague	Lyme Disease	Scabies
Murine Typhus	Plague	Zika Virus
West Nile Virus	Dengue	
Swimmer's Itch	Chikungunya	

5.4.2.4.2 Location and Extent of Hazard in Santa Barbara County

An infectious disease hazard can occur throughout the entire County.

5.4.2.4.3 History of Hazard in Santa Barbara County

1. Foodborne outbreaks occur every year in Santa Barbara County, commonly the result of Norovirus, and have sickened up to 100 individuals at a single facility.
2. 2009 H1N1 "Swine Flu" pandemic required rationing and prioritization of influenza vaccine. Public was given 27,000 vaccinations at large and small scale clinics. One hundred thirty-two thousand (132,000) doses of vaccine were distributed Countywide through response partners. The Santa Barbara Public Health Department Operations Center was activated for more than three months.
3. 2013 Serogroup B meningococcal outbreak occurred at UCSB requiring a joint effort between the CDC, FDA, California Department of Public Health, the Santa Barbara County Public Health Department. FDA approved an investigational new drug (IND) to allow for a stand up of a CDC approved mass vaccination operation for students. 17,540 total vaccinations were given.

5.4.2.4.4 Probability of Occurrence

Disease outbreaks and flu epidemics occur on an ongoing basis. Occasionally these outbreaks require the initiation of the Santa Barbara County Public Health Department Infectious Disease Response Plan but have required little to no support from the County Emergency Operations Center. There is a continued threat from a novel influenza virus or other emerging epidemic or pandemic disease that would require a disaster response at the EOC level. The disease could affect the county infrastructure, and the ability of the EOC and other county departments to respond due to disease related loss of staff.

5.4.2.4.5 Climate Change Consideration

While many vector born and zoonotic diseases (VBZD), such as malaria, yellow fever, dengue, and murine typhus, are rarely seen in the United States, we are directly susceptible to VBZD that are found in warmer climates and vulnerable due to global trade and travel.
Many VBZD are climate sensitive and ecological shifts associated with climate change are expected to impact the distribution and incidences of these diseases.
Changes in temperature and precipitation directly affect vector born disease transmission through pathogen-host interaction, and indirectly through ecosystem changes and species composition.
As temperatures increases vectors can spread into new areas that were previously too cold. For example, two mosquito vectors that carry malaria are now found at the U.S.-Mexico border.

5.4.2.5 Hazardous Materials Release

5.4.2.5.1 Description of Hazard

Hazardous Waste/Materials are widely used or created at facilities such as hospitals, wastewater treatments plants, universities and industrial/manufacturing warehouses. Several household products such as cleaning supplies and paint are also considered hazardous materials. Hazardous materials include:

- Explosives;
- Flammable, non-flammable, and poisonous gases;
- Flammable liquids;
- Flammable, spontaneously combustible, and dangerous when wet solids;
- Oxidizers and organic peroxides;
- Poisons and infectious substances;
- Radioactive materials; and
- Corrosive materials.

Both mobile and external hazardous materials releases can spread and affect a wide area, through the release of plumes of chemical, biological, or radiological elements or leaks or spills. Conversely, internal releases are more likely to be confined to the structure the material is store in.

Chemical may be corrosive or otherwise damaging over time. A hazardous materials release could also result in fire or explosion. Contamination may be carried out of the immediate area of the incident by people, vehicles, wind, and water. Weather conditions can increase the size and intensity of the Hazardous Materials Release. Typography, such as hills and canyons, can increase the size of the release or make it more difficult to contain.

5.4.2.5.2 Location and Extent of Hazard in Santa Barbara County

The locations and identity of facilities that store hazardous materials are reported to local and federal governments. Many facilities have their own hazardous materials guides and response plans, including transportation companies who transport hazardous materials.

The release of hazardous materials into the environment can cause a multitude of problems. Although these incidents can happen almost anywhere, certain areas of the County are at higher risk, such as near roadways that are frequently used to transport hazardous materials and locations with industrial facilities that use, store, and/or dispose of such materials. Areas crossed by railways, waterways, airways, and pipelines also have increased potential for mishaps.

5.4.2.5.3 History of Hazard in Santa Barbara County

No significant historical events to report to date

5.4.2.5.4 Probability of Occurrence

The release of hazardous materials can occur throughout the entire county. Incidences can occur during production, storage, transportation, use or disposal of hazardous materials. Communities can be at risk if a chemical is used unsafely or released in harmful amounts into the environment. Hazardous materials can cause death, serious injury, long lasting health effects, and damage to buildings, the environment, homes, and other property.

5.4.2.5.5 Climate Change Consideration

As mentioned above, weather can play a significant factor in hazardous material releases. While there is little evidence to link climate change increase occurrences of hazardous material releases, it could impact the response and recovery efforts.

5.4.2.6 Radiological Accidents

5.4.2.6.1 Description of Hazard

Radioactive materials are routinely transported in California. These materials include the medical and industrial sources described below, as well as wastes that have radioactive components. Many of the radioactive waste shipments come from research and cleanup efforts at national laboratories and nuclear power plants. Radiological accidents that result in the release of radioactive materials may result in long-term health risks and contamination of the state resources, including air, water supply, groundwater, and agricultural lands.

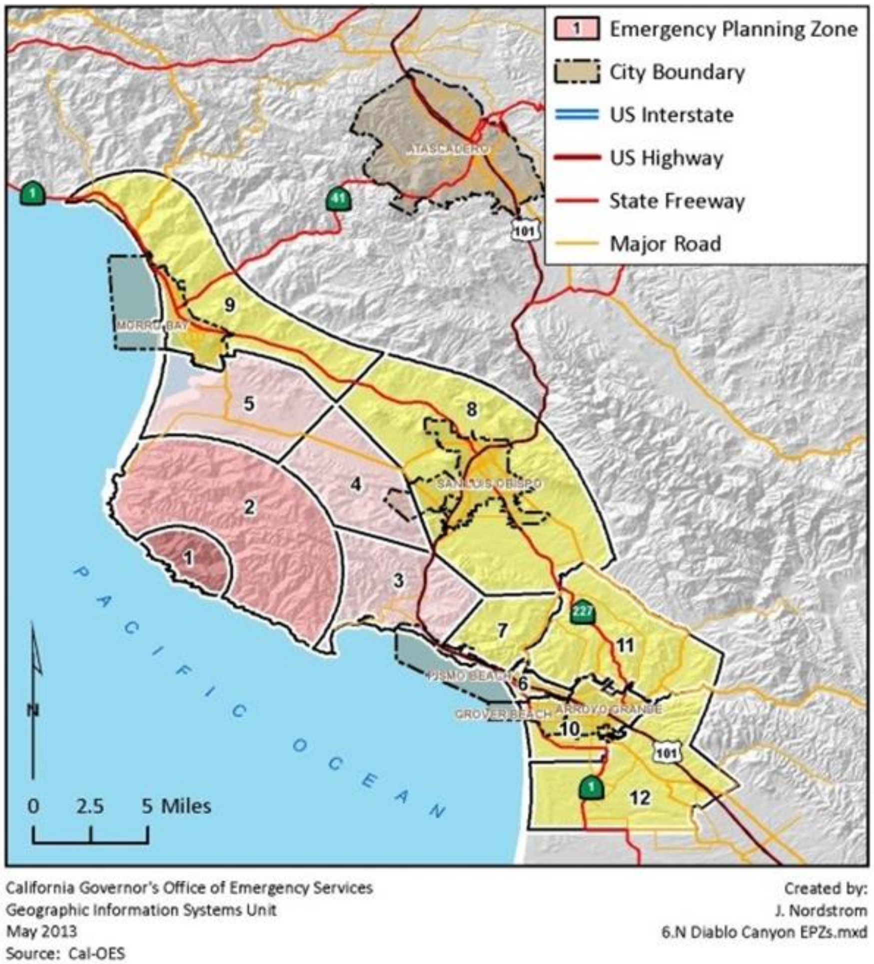
Four (4) Emergency Classification Levels (ECLs) have been established in federal regulations to characterize the severity of the emergency and the response actions required. The ECLs must be used as the foundation for emergency response planning, training and exercises.

5.4.2.6.2 Location and Extent of Hazard in Santa Barbara County

There are a few medical and industrial sources within the county that generate radioactive material; and because of the transport of the material this hazard can occur throughout most of the county. Diablo Canyon Power Plant in San Luis Obispo County is the only operating nuclear power plant (NPP) in California. The Diablo Canyon plant is undergoing seismic studies to identify the location and potential hazards associated with a recently identified off-shore earthquake fault zone as part of relicensing by the California Public Utilities Commission (CPUC) and the federal Nuclear Regulatory Commission (NRC).

State and local governments having jurisdiction within ten miles of an operating nuclear power plant in the U.S. must plan, train, and conduct emergency exercises annually in accordance with federal regulations. Emergency Planning Zone (EPZ) for Diablo Canyon Nuclear facility is shown in **Figure 5.22**. As part of the planning basis, affected agencies must establish EPZs, which consist of areas within an approximate ten mile radius drawn around each plant site. The exact EPZ size is established to provide for substantial reduction in early severe health effects in the event of a worst-case core melt accident.

Figure 5.23 A Emergency Planning Zone (EPZ) for Diablo Canyon Nuclear Facility



5.4.2.6.3 History of Hazard in Santa Barbara County

No significant radiological release have occurred to date in Santa Barbara or the state of California.

5.4.2.6.4 Probability of Occurrence

Due to strict regulation of nuclear power plants in the United States, significant nuclear power incidents that can cause harm to the public have low probability of occurrence. The probability of a catastrophic event involving a nuclear power plant is low and these plants are extremely well protected. However, as evidenced by the March 2011 events at the Fukushima Daiichi plant in Japan, caused by the Tohoku Earthquake and Tsunami, the consequences of a severe accident or a successful terrorist attack on a nuclear power plant that results in a release of radioactive materials could be very significant.

5.4.2.6.5 Climate Change Consideration

While there is little evidence to link climate change increase occurrences of radiological material releases, it could impact the response and recovery efforts.

5.4.2.7 Terrorism

5.4.2.7.1 Description of Hazard

The term terrorism refers to intentional, criminal malicious acts. There is no single, universally accepted definition of terrorism, and it can be interpreted in many ways. Terrorism is defined in the Code of Federal Regulations as "*...the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.*" (28 CFR, Section 0.85). For the purposes of this plan, terrorism refers to the use of weapons of mass destruction, including biological, chemical, nuclear, and radiological weapons; arson, incendiary, explosive, and armed attacks; industrial sabotage and intentional hazardous materials releases; and cyber terrorism. Conventional Attacks/Active Shooter incident is initiated by humans. It can be a well-planned coordinated attack with multiple suspects, or the result of a lone individual on a rampage.

5.4.2.7.2 Location and Extent of Hazard in Santa Barbara County

Terrorism can occur throughout the entire county but due to its intended purpose would most likely happened in more populous urban areas where more devastation (and fear) will ensue.

5.4.2.7.3 History of Hazard in Santa Barbara County

While the county has seen serval recent events of mass casualties brought on by disgruntled or distraught individuals; none of them can be categorized as terrorism.

5.4.2.7.4 Probability of Occurrence

All County businesses and facilities are perceived as a soft target resulting in increased property crimes by criminals who live outside the County. However, as the history shows, Isla Vista is on the largest soft targets in the County. Isla Vista is on the most densely populated areas in the western United States. During the weekend nights, it has historically been the location of several street parties inviting thousands of people to the community. Halloween has been a problem in the past, bringing up to forty-thousand street partygoers. Although in 2014 the celebration was subdued to local efforts on the part of students and community members to keep it smaller in nature.

5.4.2.7.5 Climate Change Consideration

While there is little evidence to link climate change increase occurrences of terrorism, depending on the type of attack, it could impact the response and recovery efforts.

5.4.2.8 Cyber Threats

5.4.2.8.1 Description of Hazard

A cyber security threat is a circumstance or event that has or indicates the potential to exploit vulnerabilities and to adversely impact organizational operations, organizational assets (including information and information systems), individuals, other organizations, or society. Critical infrastructure, such as utilities and telecommunications, are also potential targets. Examples of cyber threats include malware, phishing, denial of service attacks, ransomware, and state-sponsored hacking.

5.4.2.8.2 Location and Extent of Hazard in Santa Barbara County

This hazard can happen anywhere within the County but will generally be targeted towards larger corporations or government.

5.4.2.8.3 History of Hazard in Santa Barbara County

While there have been several smaller cyber threats and hacking, none have reached a level of significance.

5.4.2.8.4 Probability of Occurrence

Cyber threats are on the rise globally, national, and locally. The probability of occurrence of cyber threats is rapidly increasing, especially with increased reliance on the Internet and cloud-based computing.

5.4.2.8.5 Climate Change Consideration

While there is little evidence to link climate change to increase in occurrences of cyber threats, the target could be related to persons/groups with issues with individuals or companies they perceive to have effect on the climate (i.e., greenhouse gas producers).

5.4.2.9 Aircraft Crashes

5.4.2.9.1 Description of Hazard

Aircraft crashes are defined as any accident of private, commercial, or military aircraft on land or over sea. Aircraft crashes, like other transportation accidents, are less likely to lead to a state or federal disaster declaration, than other hazards previously and afore mentioned.

5.4.2.9.2 Location and Extent of Hazard in Santa Barbara County

In addition to being within the flight pattern of many airports providing regional flights (i.e., Los Angeles International, San Francisco International, Oakland, San Jose International, Burbank Airport, John Wayne Airport, Long Beach Airport, Ontario International Airport), Santa Barbara has four (4) general aviation airports: 1) Lompoc, 2) Santa Barbara, 3) Santa Maria Public, and 4) Santa Ynez.

> The Santa Barbara Airport (SBA) is located near Goleta, west of Santa Barbara. On any given day, an average of 2,100 passengers arrive and depart from the airport. Santa Barbara is the busiest airport on the California coast, between Los Angeles and San Jose; serving more than 700,000 passengers annually. Five passenger airlines and one cargo carrier operate approximately 40 daily flight departures at the airport.
>
> The Santa Maria Airport (SMX) is located just southwest of downtown Santa Maria. The airport provides facilities for one regional airline and serves as home base for over 200 general aviation aircraft. With the longest runway on the Central Coast, and with continued improvements geared toward growth, SMX is a welcome location for future businesses and expansion.

The Lompoc Airport (LPC) is located on the north side of Lompoc. For the 12 month period ending May 8, 2009, the airport had 30,100 general aviation aircraft operations and 200 military aviation operations; with an average of 83 general aviation operations per day and 17 military operations per month. 71 single-engine and 4 ultra-light aircraft were based at the airport during that time. Skydiving operations are held daily at Skydive Santa Barbara.

The Santa Ynez Airport (IZA) is located just southeast of Santa Ynez. As of 2014, the airport serves three main functions: Private aircraft owners use it as a hub for storing their planes and for refueling, the airport boasts one of the best gliding locations in Southern California, and the airport serves as the staging ground for the Santa Barbara County Air Support Unit.

5.4.2.9.3 History of Hazard in Santa Barbara County

No significant historical events to report to date

5.4.2.9.4 Probability of Occurrence

With the amount of general aviation operations, military flights, and its position between Los Angeles/San Diego and the Bay Area, there is a notable possibility of Santa Barbara County experiencing an airline crash.

5.4.2.9.5 Climate Change Consideration

There is no none linkage between climate change and airline crashes. Although bad weather does play a factor in some airline crashes, current technology does a good job of forecasting potential conditions.

5.4.2.10 Train Accidents

5.4.2.10.1 Description of Hazard

Train accidents are defined as any accidents involving public or private trains carrying passengers or cargo along the rail corridor. Train accidents, like other transportation accidents, are less likely to lead to a state or federal disaster declaration, than other hazards previously and afore mentioned.

5.4.2.10.2 Location and Extent of Hazard in Santa Barbara County

Trains running through Santa Barbara County, and in close proximity to U.S. Highway 101, carry both commuters and commodities. Such commodities include hazardous materials, fuel (including oil), agriculture, meats, and non-consumables. A hazardous materials incident on the rails or roadway has the potential to shut down both rail and highway transportation routes where the two are within close proximity to another.

5.4.2.10.3 History of Hazard in Santa Barbara County

In 1991 the Seacliff Incident, in neighboring Ventura County, occurred when a train released 440 gallons of aqueous hydrazine. The accident required the evacuation of the nearby Seacliff Community along with the shutting down of Highway 101, and took 5 days to cleanup.

5.4.2.10.4 Probability of Occurrence

Train accidents are generally localized and the incidents result in limited impacts at the community level. However, if there are volatile or flammable substances on the train and the train is in a highly populated or densely forested area, death, injuries, and damage to homes, infrastructure, and the environment, including forest fires can occur.

5.4.2.10.5 Climate Change Consideration

There is no none linkage between climate change and train accidents; however, because of rail road track proximity along the Pacific Ocean, sea level rise could impact service. It is expected that conditions would be gradual in nature and would not create unforeseen problems or complications.

5.4.2.11 Natural Gas Pipeline Rupture & Storage Facilities

5.4.2.11.1 Description of Hazard

The United States is heavily dependent on transmission pipelines to distribute energy and fuel sources. Virtually all natural gas, which accounts for about 28 percent of energy consumed annually, is transported by transmission pipelines. Energy demand in the United States continues to increase. Although California is a leader in exploring and implementing alternative energy sources such as wind and solar, the expansion of traditional energy sources, such as natural gas, continues.

Most of the natural gas used in California comes from out-of-state natural gas basins. It is delivered to California via the interstate natural gas pipeline system. In 2012, California customers received 42 percent of their natural gas supply from basins in the Southwest, 22 percent from Canada, 23 percent from the Rocky Mountains, and 12 percent from California.

Generally speaking, transmission lines are large-diameter steel pipes carrying natural gas at high pressure and compressed to provide higher carrying capacity. Transmission lines are both interstate and intrastate, with the latter connecting to smaller distribution lines delivering gas directly to homes and businesses.

5.4.2.11.2 Location and Extent of Hazard in Santa Barbara County

Natural gas transported via the interstate pipelines, and some of the California-produced natural gas, is delivered into the Pacific Gas & Electric (PG&E) and Southern California Gas (SoCal Gas) intrastate natural gas transmission pipeline systems (commonly referred to as California's "backbone" natural gas pipeline system).Natural gas on the utilities' backbone pipeline systems is then delivered into the local transmission and distribution pipeline systems, or to natural gas storage fields. PG&E and SoCal Gas own and operate several natural gas storage fields that are located in Northern and Southern California.

Southern California Gas Company operates a natural gas storage field, La Goleta Storage Field, located on More Ranch Road in the Goleta area. SoCal Gas purchases market quality natural gas when prices are low and stores it in a depleted gas reservoir located at the La Goleta.

Data compiled by the Pipeline and Hazardous Materials Safety Administration (PHMSA) report a total of 115,292 miles of gas pipelines in California, of which 12,414 miles are classified as gas transmission lines, 403 miles are gas-gathering lines, and the majority, 102,475 miles, are for gas distribution. Nearly 40 percent of gas transmission lines are located in Los Angeles, Kern, and San Bernardino counties.

Figure 5.23 shows the location and ownership of the natural gas pipeline system. Many of the pipelines are located in areas with high seismic activity, crossing the San Andreas and other active faults.

Figure 5.24 Natural Gas Pipeline and Service Providers in California

5.4.2.11.3 History of Hazard in Santa Barbara County

No significant historical events to report to date.

5.4.2.11.4 Probability of Occurrence

Increased urbanization is resulting in more people living and working closer to existing gas transmission pipelines that were placed prior to government agencies adopting and implementing land use and other pipeline safety regulations. Compounding the potential risk is the age and gradual deterioration of the gas transmission system due to natural causes. Significant failure, including pipe breaks and explosions, can result in loss of life, injury, property damage, and environmental impacts. Causes of and contributors to pipeline failures include construction errors, material defects, internal and external corrosion, operational errors, control system malfunctions, outside force damage, subsidence, and seismicity. Growth in population, urbanization, and land development near transmission pipelines, together with addition of new facilities to meet new demands, may increase the likelihood of pipeline damage due to human activity and the exposure of people and property to pipeline failures.

5.4.2.11.5 Climate Change Consideration

Climate change will not have a direct effect on natural gas pipelines; however, climate change could increase the demand for natural gas. This increase in demand may require the development of new pipelines; which could increase potential complications.

5.4.2.12 Levee Failure

5.4.2.12.1 Description of Hazard

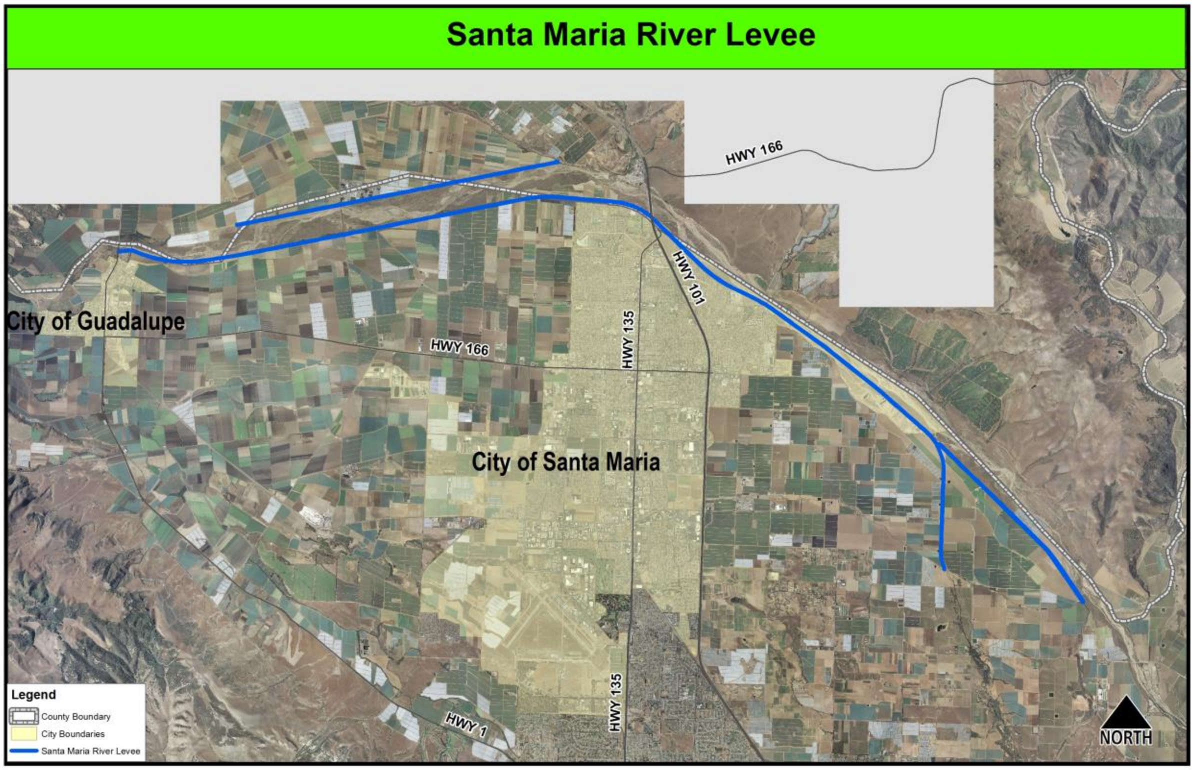
There are several areas in California that use levees to protect land from peak flood levels and/or to protect land that is below sea level. The first type of levee should be designed to withstand peak flood levels that are caused by rapid snow melt or intense rainfall within the watershed. The second type of levee should be designed to withstand nominal water levels on a continuous basis as well as peak flood levels. Failure of levees is defined as conditions that breach and/or degrade the levees.

In California, levees protect farmland, ranchland, rural residential areas, urban residential areas, and infrastructure such as roads, highways, and waterways or canals.

5.4.2.12.2 Location and Extent of Hazard in Santa Barbara County

The Santa Maria River Levee runs along the left bank (looking downstream) of the Santa Maria River approximately 17 miles from Fugler Point (at the junction of the Cuyama and Sisquoc Rivers) to approximately 600 feet downstream to the State Highway 1 Bridge near the City of Guadalupe. Approximately 5 miles of levee run along the right bank of the Santa Maria River from a point about 1 ¼ miles downstream from US Highway 101 to a point about 1 ½ miles upstream from the Southern Pacific Railroad Bridge at Guadalupe. Also, approximately 1.8-2.06 miles of channel and levees extend from the mouth of Bradley Canyon to Santa Maria River to divert flood waters. This levee system provides protection to the City of Santa Maria; including the main business district, commercial, industrial and residential property, as well as agricultural lands in the Santa Maria Valley.

Figure 5.25 Santa Maria River Levee



5.4.2.12.3 History of Hazard in Santa Barbara County

The construction of the Santa Maria River Levee was completed in 1963 by the U.S. Army Corps of Engineers. The levee was constructed to provide protection against flooding and debris flow from the City of Santa Maria; including the main business district (overflow area), adjacent agricultural lands in the Santa Maria Valley, and valuable residential, commercial, industrial, and public properties which would likely be subject to flooding. In addition, protection is available for US Highway 101, State Highway 1, Southern Pacific Railroad, Santa Maria Valley Railroad, three highway bridges, and one railroad bridge; all of which were previously subject to overflow in the Santa Maria Valley. Without protection from the levees, the standard project flood would inundate most of the Santa Maria Valley, including 80% of the city of Santa Maria.

The Santa Maria River Levee was designed to protect Santa Maria Valley from a standard project flood ranging in magnitude from 150,000 cubic feet per second (cfs) at the downstream end of the left levee to up to 160,000 cfs at Fugler Point. The Bradley Canyon Levees and channel improvements were designed to accommodate the standard project flood, which can range in magnitude from 7,000 to 9,000 cfs. However, flood flows much less than the design discharges significantly damamged the levee system in 1966, 1969, 1980 and 1998. Damages from each of these floods occurred at different locations, under relatively low flow conditions, and were caused by flow impingement on the levee structure. In 1981 about a fourth of the project was protected from further undermining with groins andother features but a subsequent 600 ft breach in 1998 in a reach without groins indicating that future damage was likely.

In 2009, the Army Corps of Engineers improved the riverside slope of south levee with soil cement revetment and steel sheet pile wall protection from Blosser Road to the Bradley Canyon confluence. A portion of the Bradley Canyon levee was also improved in 2013.

5.4.2.12.4 Probability of Occurrence

Several floods have occurred since the levees were constructed, each with relatively low peak discharges. Because the natural channel averages about 2,000' in width, the floods did not fill the channel but meandered and impinged against the existing levees. This impingement undermined the levee toe causing considerable damage and jeopardized adjacent properties, demonstrating that the levee was vulnerable to smaller discharges and as a result would not provide the protection for which it was designed. The levee improvements by the Corps will reduce the probability of impinging flows undermining the levee in critical areas. Those portions of the levee that were not improved will still be subject to the possibility of undermining and failure.

5.4.2.12.5 Climate Change Consideration

Increased rainfall, runoff, and snow pack melt from climate change could generate more water than the levees were designed to support. Additionally, climate change conditions could damage earthen levees creating weaknesses that would also reduce its level of protection.

5.4.2.13 Tsunami

5.4.2.13.1 Description of Hazard

A tsunami is a series of long waves generated in the ocean by a sudden displacement of a large volume of water. Underwater earthquakes, landslides, volcanic eruptions, meteoric impacts, or onshore slope failures cause this displacement. Tsunami waves travel at speeds averaging 450 to 600 miles per hour. As a tsunami nears the coastline, its speed diminishes, its wavelength decreases, and its height increases. Depending on the type of event that creates the tsunami, as well the remoteness of the event, the tsunami could reach land within a few minutes or after several hours. Low-lying areas could experience severe inland inundation of water and deposition of debris more than 3,000 feet inland.

5.4.2.13.2 Location and Extent of Hazard in Santa Barbara County

The Cities of Santa Barbara and Carpinteria are located on or near several offshore geological faults, the more prominent faults being the Mesa Fault, the Santa Ynez Fault in the mountains, and the Santa Rosa Fault. There are other unnamed faults in the offshore area of the Channel Islands. These faults have been active in the past and can subject the entire area to seismic action at any time.

5.4.2.13.3 History of Hazard in Santa Barbara County

The relative threat for local tsunamis in Santa Barbara can be considered low due to low recurrence frequencies. Large, locally-generated tsunamis are estimated to occur once every 100 years. Thirteen possible tsunamis have been observed or recorded from local earthquakes between 1812 and 1988. There have been no recorded Tsunamis in Santa Barbara County since 1988. These tsunami events were poorly documented and some are very questionable. There is no doubt that earthquakes occurring along submarine faults off Santa Barbara could generate large destructive local tsunamis (http://www.drgeorgepc.com/Tsunami1812SantaBarbara.html). Internet research provides some documentation that two tsunamis were generated from two major earthquakes in the Santa Barbara region in December of 1812. The size of these tsunamis may never be known with certainty, but there are unconfirmed estimates of 15 feet waves at Gaviota, 30-35 feet waves at Santa Barbara, and waves of 15 feet or more at Ventura. These estimates are found in various literature and based on anecdotal history only.

Major faults of the San Andreas zone, although capable of strong earthquakes, cannot generate any significant tsunamis. Only earthquakes in the Transverse Ranges, specifically the seaward extensions in the Santa Barbara Channel and offshore area from Point Arguello, can generate local tsunamis of any significance. The reason for this may be that earthquakes occurring in these regions result in a significant vertical displacement of the crust along these faults. Such tectonic displacements are necessary for tsunami generation.

Two separate events, occurring in 1877 and 1896, are listed in NOAA's online database as having heights of 1.8 and 2.5 feet waves. However, tsunami heights from historical records are estimated and should not be regarded as exact. Other recorded tsunamis affecting Santa Barbara during the 20th century are in the 0.1 – 1.0 foot range.

On February 27, 2010, a magnitude 8.8 earthquake occurred along the central coast of Chile and produced a tsunami. For the coast of Southern California, it was one of the largest tsunami episodes since 1964. In general, tsunami waves between 2 and 4 feet were reported. Tsunami waves of around 3 feet were reported by tide gauges across the Santa Barbara Channel. At Santa Barbara Pier, significant beach erosion was reported along with displacement of buoys. The tsunami surge lasted in excess of 20 hours. The most significant damage occurred along the coasts of Ventura and southern Santa Barbara counties. Numerous reports of dock damage were reported along with beach erosion.

On March 11, 2011, a magnitude 9.0 earthquake occurred off the Pacific coast of Tohoku, Japan. This earthquake devastated many communities in Japan and caused tsunami effects across the ocean in Santa Barbara County. The only significant impact to Santa Barbara County was to the dredging contractor for the harbor. The City harbor operations documented approximately $1,500 of damages (Public Assistance). The dredging contractor may pursue SBA funding.

5.4.2.13.4 Probability of Occurrence

The University of Southern California (USC) Tsunami Research Group has modeled areas in Santa Barbara County that could potentially be inundated in the event of a tsunami. This model is based on potential earthquake sources and hypothetical extreme undersea, near-shore landslide sources. The data was mapped by Cal OES for the purpose of Tsunami Evacuation Planning. Extreme tsunami inundation areas were mapped and used to profile maximum potential exposure. The figure below (**Figure 5.24**) shows tsunami run up limits for Santa Barbara County. The tsunami inundation map helps to assist cities and counties in identifying their tsunami hazard areas. The inundation line represents the maximum considered tsunami run up from a number of extreme, yet realistic, tsunami sources.

Figure 5.26 Tsunami Inundation Area

Santa Barbara County Location and Extent: Tsunami Innundation Area

Based on the tsunami inundation map above, several areas along the coast of Santa Barbara have the potential to be inundated by a tsunami. However, since the probability of an earthquake occurring is rare, the probability of a tsunami is also rare.

5.4.2.13.5 Climate Change Consideration

Tsunamis are created by earthquakes or other earth movements, to date, no relationship has been made between climate change and the occurrences of earthquakes or other earth movements.

5.4.2.14 Civil Disturbance

5.4.2.14.1 Description of Hazards

Civil Disturbance is a term generally used to describe disorderly conduct or a breakdown of orderly society by a large group of people. Civil Disturbance can range from a form protest against major socio-political problems to riots.

5.4.2.14.2 Location and Extent of Hazard in Santa Barbara County

Civil Disturbance can occur in any part of Santa Barbara County; however, it will generally be located within larger metropolitan areas.

5.4.2.14.3 History of Hazard in Santa Barbara County

No significant historical events to report to date

5.4.2.14.4 Probability of Occurrence

There are no studies that predict the probability of civil disturbance occurrences.

5.4.2.14.5 Climate Change Consideration

While there is no direct linkage between climate change and civil disturbances, there could be indirect linkages. As climate change impacts are either felt or perceived to be felt it could ignite passions within people to demonstrate against possible causes or enablers.

5.4.2.15 Well Stimulation and Hydraulic Fracturing

5.4.2.15.1 Description of Hazard

"Well stimulation" is an oil industry term which describes various techniques used to increase oil and gas production by the addition of heat (through steam), chemicals and/or pressure to the oil-bearing formation. Hydraulic fracturing, commonly called "fracking", is a specific type of well stimulation treatment that involves high - pressure injection of water, sand and chemical additives to cause fracturing of subsurface rock resulting in release of gas or oil trapped inside. Acid well stimulation introduces one or more acids (applied at any pressure) to a well or geologic formation either alone or in combination with hydraulic fracturing treatments. Steam injection (e.g., cyclic steaming, steam flooding), is a technique that heats the targeted production zone to make heavy oils flow more readily to the well bore. The intent is not to break (i.e., fracture) the oil-holding formation (which is usually sandy in composition so doesn't need to be broken), but to heat it and make the oil therein less viscous. Possible environmental impacts that could result from well stimulation treatments include effects on water and air quality and seismic safety, which are considered potential hazards and require further study.

Well stimulation treatments have occurred for many years throughout oilfields in California, mostly within Kern, Ventura and Los Angeles Counties. The State legislature passed Senate Bill (SB) 4 on September 20, 2013, which directed the State Department of Oil, Gas and Geothermal Resources (DOGGR) to begin regulating well stimulation treatments, including fracking, by amending the State Public Resources and Water Codes. On July 1, 2015, pursuant to the regulations included in SB 4, DOGGR completed the following:

- Certified the Final Environmental Impact Report (EIR) titled "Analysis of Oil and Gas Well Stimulation Treatments in California."Adopted permanent rules and regulations specific to well stimulation treatments.

SB4 specifically requires:

- Well operators to apply for a permit that includes a water management plan and a groundwater monitoring plan before performing well stimulation activities.
- DOGGR to post issued permits on the publicly accessible portion of its internet web site.
- Suppliers claiming trade secret protection for the chemical composition of additives used in hydraulic fracturing to disclose the composition of these materials to DOGGR as part of permit applications.

5.4.2.15.2 Location and Extent of Hazard in Santa Barbara County

County Planning and Development confirms that, to date, no onshore oil operators have proposed to use fracking to extract oil. Cyclic steaming techniques have been used in Santa Barbara County, mainly in the Cat Canyon oilfield in the Santa Maria Valley. More recently, cyclic steaming has also been used in the Orcutt oilfield.

5.4.2.15.3 History of Hazard in Santa Barbara County

Oil producers have generally not used hydraulic fracturing onshore in Santa Barbara County so there is no history to identify. Cyclic steaming has been used in the Cat Canyon oilfield in the Santa Maria Valley since the 1960's. Cyclic steaming has also been used in the Orcutt oilfield since 2007.

5.4.2.15.4 Probability of Occurrence

County Planning and Development confirms that hydraulic fracturing is not currently being conducted onshore in Santa Barbara County. An operator proposing to frack is required to go through an extensive environmental analysis and obtain a discretionary permit prior to implementing this technique. The probability of occurrence for fracking is low. Cyclic steaming is currently in use, as mentioned above; its probability of occurrence is high.

5.4.2.15.5 Climate Change Consideration

There are no known direct linkages between climate change and well stimulation techniques used in Santa Barbara County.

5.4.2.15 Marine Invasive Species

5.4.2.15.1 Description of Hazard

The introduction of non‐indigenous species (NIS) into coastal marine and estuarine waters can cause significant and enduring economic, human health, and environmental impacts. In coastal environments, commercial shipping is the most important vector for species introductions. Commercial ships transport organisms through two primary mechanisms (vectors): ballast water and vessel biofouling. Ballast water is taken on and released by a vessel during cargo loading and discharging operations to maintain the vessel's trim and stability. Biofouling organisms are aquatic species attached to or associated with submerged or wetted hard surfaces. Ships transfer organisms to California waters from throughout the world. The transfer of ballast water from "source" to "destination" ports results in the movement of many organisms from one region to the next. Additionally, as vessels move from port to port, biofouling communities are transported along with their "host" structure. Once introduced, invasive species are likely to become a permanent part of an ecosystem and may flourish, creating environmental imbalances, presenting risks to human health, and causing significant economic problems. Examples include the zebra and quagga mussel infestations in the Colorado River Aqueduct System and California waterways, and the propagation of aquatic weeds, such as water hyacinth, in the California Delta.

5.4.2.15.2 Location and Extent of Hazard in Santa Barbara County

All water bodies that are subject to recreational/commercial vessels and/or hydraulically connected to potential sources of infestation.

5.4.2.15.3 History of Hazard in Santa Barbara County

The County of Santa Barbara Community Services Department Parks Division has been conducting Aquatic Invasive Species inspections on vessels being launched at Cachuma Lake since 2008. To date, staff has no indications that Cachuma Lake has been exposed to Quagga or Zebra Mussels, and early detection monitoring has detected no mussels.

5.4.2.15.4 Probability of Occurrence

In December 2013, the operator at Lake Piru in Ventura County notified the State of California Department of Fish and Wildlife that Quagga Mussels are present in Lake Piru. This is a significant finding because it is the first lake infected by the Quagga Mussel that is not fed by the Colorado River system.

5.4.2.15.5 Climate Change Consideration

Climate change can directly affect Marine Invasive Species and their ability to thrive off our coast.

Section 6 VULNERABILITY ASSESSMENT

6.1 OVERVIEW

The purpose of this section is to estimate the potential vulnerability (impacts) of hazards within the county on the built environment (residential, non-residential, critical facilities, etc.) and population. To accomplish this three (3) different approaches will be used: 1) application of scientific loss estimation models; 2) analysis of exposure of critical facilities to hazards; and 3) a qualitative estimate of the impacts to hazards. It is important to note that the first two approaches can only be applied to hazards that have an exposure area (footprint). For those hazards where an exposure layer does not exist, a brief qualitative assessment of the potential vulnerability will be presented. This will be done for hazards that are countywide or can occur anywhere within the county.

6.1.1 Scientific Loss Estimation Models

The scientific loss estimation modeling efforts will include the utilization of the Federal Emergency Management Agency (FEMA) Hazus-MH 3.0 model. Hazus-MH is a nationally applicable standardized methodology that estimates potential losses from earthquakes, hurricane winds and floods. Hazus-MH uses state-of-the-art Geographic Information Systems (GIS) software to map and display hazard data and the results of damage and economic loss estimates for buildings and infrastructure. It also allows users to estimate the impacts of earthquakes, hurricane winds and floods on populations. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing mitigation plans and policies, emergency preparedness and response and recovery planning. This modeling will be done for Earthquake and Flood hazards only.

Hazus standard configuration allows for “out-of-the-box” regional or community-wide loss assessment using default (“Level 1) building inventory databases, aggregated to the census tract (earthquake) or census block (flood) level. A summary of Hazus default building inventory data for Santa Barbara County, and the unincorporated areas of the County, are given in **Table 6-1** (by general occupancy) and **Table 6-2** (by general building type). The distribution of buildings across the various construction classes given in Table 2 is estimated using Hazus default relationships (e.g., x percent of offices may be built of concrete frame, y% of offices may be built of reinforced masonry, etc.). The actual distribution of building across these construction types may be different. For example, the California Seismic Safety Commission (CSSC) published results of unreinforced masonry building surveys (CSSC, 2006), which indicate that the 23 URM buildings in Unincorporated Santa Barbara County have been retrofitted (vs. 185 URM buildings predicted by the default database).

Table 6.1 Hazus-MH 3.0 Default Building Inventory Data for Santa Barbara County by General Occupancy

Jurisdiction	General Occupancy	Building Replacement Value ($1,000)	Contents Replacement Value ($1,000)	Building Square Footage (1,000 Sq. Ft.)	Building Count
Santa Barbara County	Residential	$34,724,716	$17,364,871	231,312	116,304
	Commercial	$6,387,442	$6,837,941	38,617	7,325
	Industrial	$1,307,134	$1,815,947	9,609	1,934
	Other	$1,805,563	$1,905,059	11,455	1,810
	TOTAL	**$44,224,855**	**$27,923,818**	**290,993**	**127,373**
Unincorporated County	Residential	$12,555,887	$6,278,776	80,881	41,690
	Commercial	$1,409,147	$1,519,231	8,436	1,905
	Industrial	$329,603	$447,815	2,520	626
	Other	$638,808	$648,426	4,486	615
	TOTAL	**$14,933,445**	**$8,894,248**	**96,323**	**44,836**
	%	**33.8%**	**31.9%**	**33.1%**	**35.2%**

Table 6.2 Hazus-MH 3.0 Default Building Inventory Data for Santa Barbara County by General Building Type

Jurisdiction	General Building Type	Building Replacement Value ($1,000)	Building Replacement Value (%)	Estimated Building Count	% of Building Count
Santa Barbara County	Concrete	$2,492,739	5.6%	2,396	2%
	Manufactured Housing	$415,023	0.9%	7,669	6%
	Precast Concrete	$1,556,413	3.5%	2,005	2%
	Reinforced Masonry	$3,088,459	7.0%	3,858	3%
	Steel	$2,461,502	5.6%	2,614	2%
	Unreinforced Masonry	$614,394	1.4%	727	1%
	Wood Frame (Other)	$1,733,790	3.9%	2,001	2%
	Wood Frame (Single-family)	$31,862,522	72.0%	106,108	83%
	TOTAL	**$44,224,842**		**127,378**	
	Concrete	$595,812	4.0%	623	1%

Unincorporated County	Manufactured Housing	$149,010	1.0%	2,734	6%
	Precast Concrete	$379,548	2.5%	561	1%
	Reinforced Masonry	$772,503	5.2%	1,120	2%
	Steel	$627,345	4.2%	731	2%
	Unreinforced Masonry	$145,716	1.0%	185	0%
	Wood Frame (Other)	$396,156	2.7%	563	1%
	Wood Frame (Single-family)	$11,867,350	79.5%	38,324	85%
	TOTAL	**$14,933,440**		**44,841**	
	%	**33.8%**		**35.2%**	

Table 6-3 provides a summary of the Hazus-MH essential facilities default data (police stations and public schools) for anta Barbara County, and the unincorporated County Areas. The Hazus-MH essential facilities default data for fire station was augmented to account for a significant number of missing facilities for Santa Barbara County. Table 6-3 also indicates the construction type and design level assumed by Hazus-MH for these facilities; all are assumed to be wood frame of either High or Moderate code design level. A more accurate risk assessment could be conducted if additional facility information was collected, such as structural system, number of stories, year of construction/seismic code used for design, building square footage, building replacement value, and content replacement value. It should be noted that the Hazus-MH default database represents each school campus with a single building record of an assumed construction type. In reality, most public schools are multi-building campuses, built over a period of years (i.e., buildings may be designed to different seismic codes). To improve the risk assessment for public schools, information on each individual building would need to be collected.

Table 6.3: Hazus-MH 3.0 Default Essential Facilities Data for Santa Barbara County

Essential Facility Type	HAZUS-MH Default Structural Class and Design Level	Santa Barbara County	Unincorporated County Areas
Fire Stations*	W1 (Wood Frame ≤ 5,000Sq.Ft.), Moderate Code Design Level	41	17
Police Stations	W1 (Wood Frame ≤ 5,000Sq.Ft.), Moderate Code Design Level	16	12
Public Schools	W1 (Wood Frame ≤ 5,000Sq.Ft.), High Code Design Level	123	34

* For the current assessment, the default fire station data has been revised to include missing stations.

The lifeline inventory within HAZUS-MH is divided between transportation and utility lifeline systems. There are seven transportation systems that include highways, railways, light rail, buses, ports, ferries and airports; and six utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power, and communications. The lifeline inventory data are provided in **Tables 6-4** and **Table 6-5**.

Table 6.4 Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	360	**407.90**
	Segments	270	**3,299.40**
	Tunnels	1	**1.70**
		Subtotal	**3,709.10**
Railway	Bridges	6	**0.60**
	Facilities	5	**13.30**
	Segments	157	**263.90**
	Tunnels	0	**0.00**
		Subtotal	**277.80**
Light Rail	Bridges	0	**0.00**
	Facilities	0	**0.00**
	Segments	0	**0.00**
	Tunnels	0	**0.00**
		Subtotal	**0.00**
Bus	Facilities	5	**6.40**
		Subtotal	**6.40**
Ferry	Facilities	3	**4.00**
		Subtotal	**4.00**
Port	Facilities	0	**0.00**
		Subtotal	**0.00**
Airport	Facilities	5	**53.30**
	Runways	8	**303.70**
		Subtotal	**357.00**
		TOTAL	**4,354.30**

Table 6.5: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	**323.20**
	Facilities	0	**0.00**
	Pipelines	0	**0.00**
		Subtotal	**323.20**
Waste Water	Distribution Lines	NA	**193.90**
	Facilities	8	**628.70**
	Pipelines	0	**0.00**
		Subtotal	**822.60**
Natural Gas	Distribution Lines	NA	**129.30**
	Facilities	0	**0.00**
	Pipelines	0	**0.00**
		Subtotal	**129.30**
Oil Systems	Facilities	2	**0.20**
	Pipelines	0	**0.00**
		Subtotal	**0.20**
Electrical Power	Facilities	4	**519.20**
		Subtotal	**519.20**
Communication	Facilities	42	**5.00**
		Subtotal	**5.00**
		TOTAL	**1,799.50**

6.1.2 Analysis of Exposure of Critical Facilities to Hazards

Santa Barbara County Planning Team and the Mitigation Advisory Committee (MAC) reviewed and updated its list critical facilities and a generated a summary of the facilities by major categories: Law, Fire, Public Works, Health and Human Services, Administrative, Communications, and Other (**Table 6-6**). This list of critical facilities presents the buildings and structures that are the County's primary concern for ensuring resiliency; they include both County owned or operated facilities as well as some privately owned and operated facilities. Information for County owned or operated facilities (building replacement cost and building content costs) were reviewed and updated as needed; where available the same information was reviewed and updated for the privately owned or operated facilities.

Using Geographic Information Systems (GIS) software, each critical facilities was geolocated on maps to illustrate the geographic location of each facility. Based on each facility's geolocation, GIS software was then used to identify facilities within the hazard exposure area (footprint). The results were a map and a table summarizing the total number of exposed critical facilities by the major categories; and a total of the building replacement cost and building content costs for county owned or operated facilities. This approach was done for Wildfire, Sea Level Rise, Dam Failure, Tsunami, Landslides/Earth Movements, Climate-related (some), and Levee Failure.

Table 6.6 Critical Facilities in Santa Barbara County

Category of Facility	Total Structures	Total Real Property	Total Personal Property
Administration	17	112,862,099	14,469,801
Communications	21	194,369	1,317,359
Fire	29	19,492,626	2,695,113
Health and Human Services	113	127,116,743	21,247,992
Law	37	137,472,148	14,310,865
Public Works	35	52,656,525	4,696,012
Other	20	46,572,863	3,822,269
Total	**272**	**496,367,373**	**62,559,411**

*****Numerous critical facilities in the County are privately owned, but fulfill our County mission, house County property, and/or house County personal. Most privately owned critical facilities have not provided Total Real Property and Total Personal Property figures, therefore these numbers are not fully reflective of the true total property values of all critical facilities in Santa Barbara County.

6.1.3 Qualitative Estimate of Impacts

The approach used to complete this effort involves utilizing readily available data (i.e., Census) to extrapolate and estimate potential vulnerability. In some cases, the estimation will build upon historic events but it may also include projecting worst case potentials. The MAC and the County Planning Team summarized the remaining hazards which the County is vulnerable and assessed the amount and type of damage that could be expected. This approach was done for Droughts/Water Shortage, Energy Shortage, Agricultural Pest, Hazardous Material Release, Terrorism, Aircraft Crashes, Civil Disturbance, Climate-related (some) Oil Spill, Epidemic/Pandemic, Radiological Incident, Cyber Threat, Train Accident, Well Stimulation/Fracking, and Marine Invasive Species.

6.2 SCIENTIFIC LOSS ESTIMATION ANALYSIS

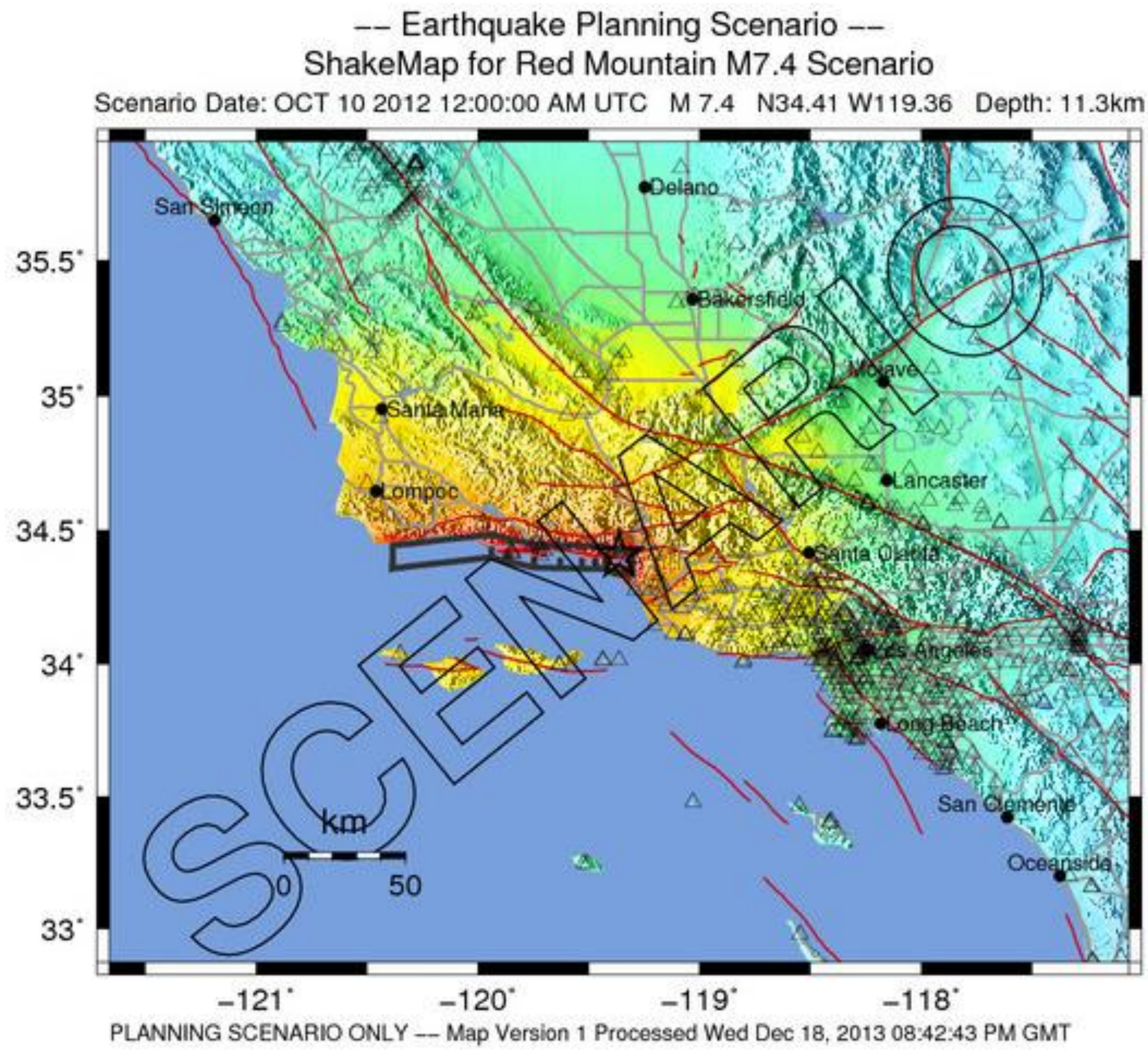
6.2.1 Earthquake and Liquefaction *(High Impact/Medium Probability)*

The entire geography of Santa Barbara County is exposed to some risk of shaking from an earthquake. The many fault lines, soil types, and construction types lead to a complicated assessment of vulnerability to earthquake. However, most of the land-based faults are either inactive or potentially active. Nearly all of the seismicity has been in the Santa Barbara Channel.

6.2.1.1 HAZUS-MH Earthquake Risk Assessment

Two earthquake scenarios developed by the United States Geological Survey (USGS), as shown in **Figure 6.1** and **Figure 6.2**, were selected to assess the range of impacts across the county. County-level maps of ground shaking for the same scenarios are shown in **Figure 6.3** and **Figure 6.4**.

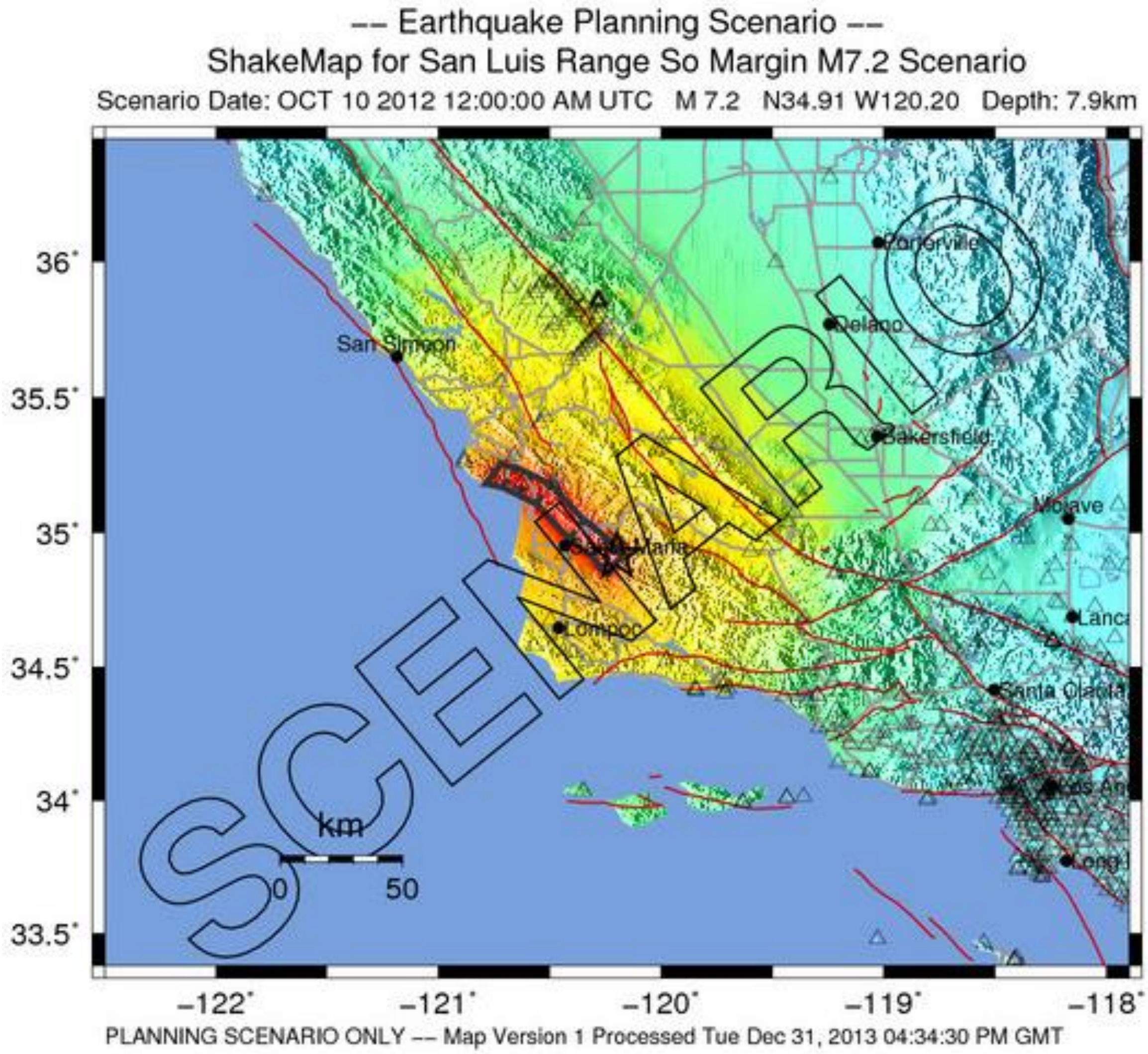
Figure 6.1: Scenario 1 – M7.4 Earthquake on the Red Mountain Fault



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.1	0.5	2.4	6.7	13	24	44	83	>156
PEAK VEL.(cm/s)	<0.07	0.4	1.9	5.8	11	22	43	83	>160
INSTRUMENTAL INTENSITY	I	II–III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Wald, et al.; 1999

Figure 6.2 Scenario 2 M7.2 Earthquake on the San Luis Range Fault, South Margin



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.1	0.5	2.4	6.7	13	24	44	83	>156
PEAK VEL.(cm/s)	<0.07	0.4	1.9	5.8	11	22	43	83	>160
INSTRUMENTAL INTENSITY	I	II–III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Wald, et al.; 1999

Figure 6.3 USGS ShakeMap Ground Motions for Santa Barbara County for a M7.4 Earthquake on the Red Mountain Fault (Scenario 1)

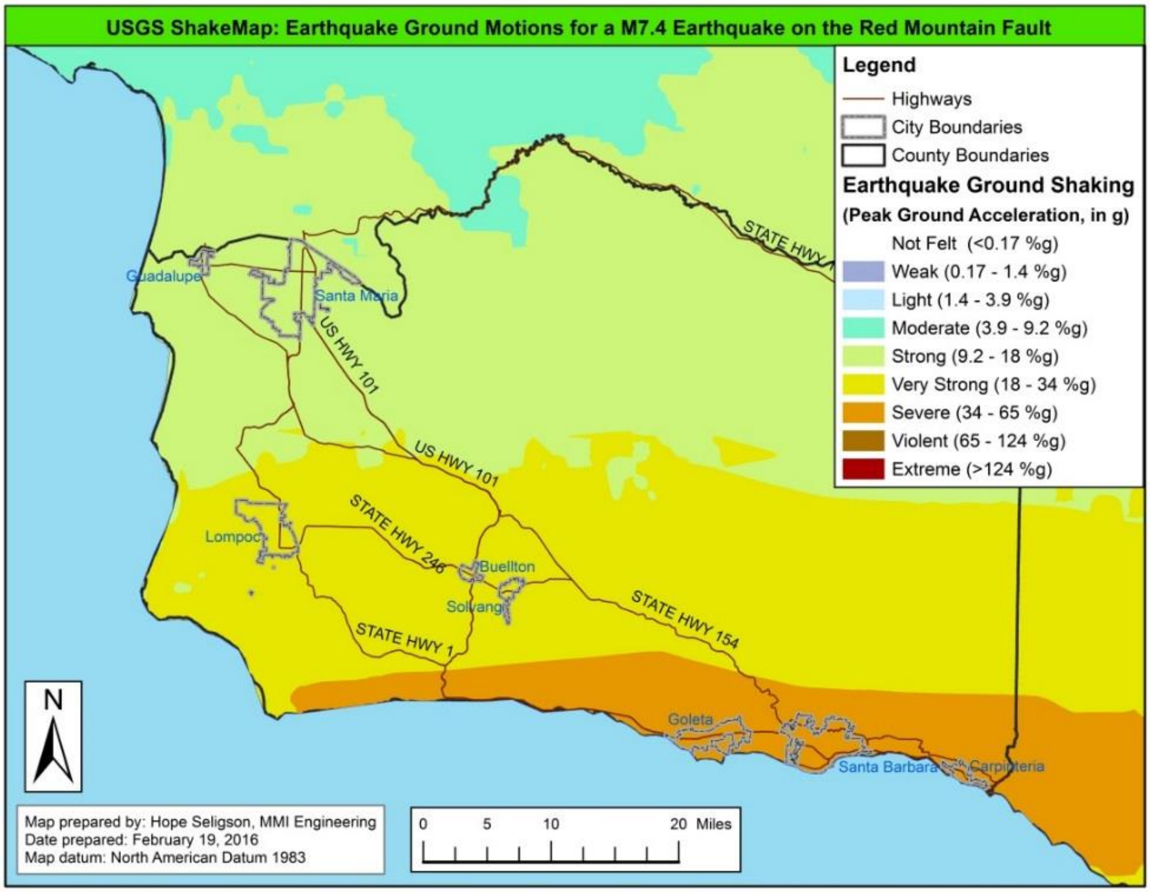
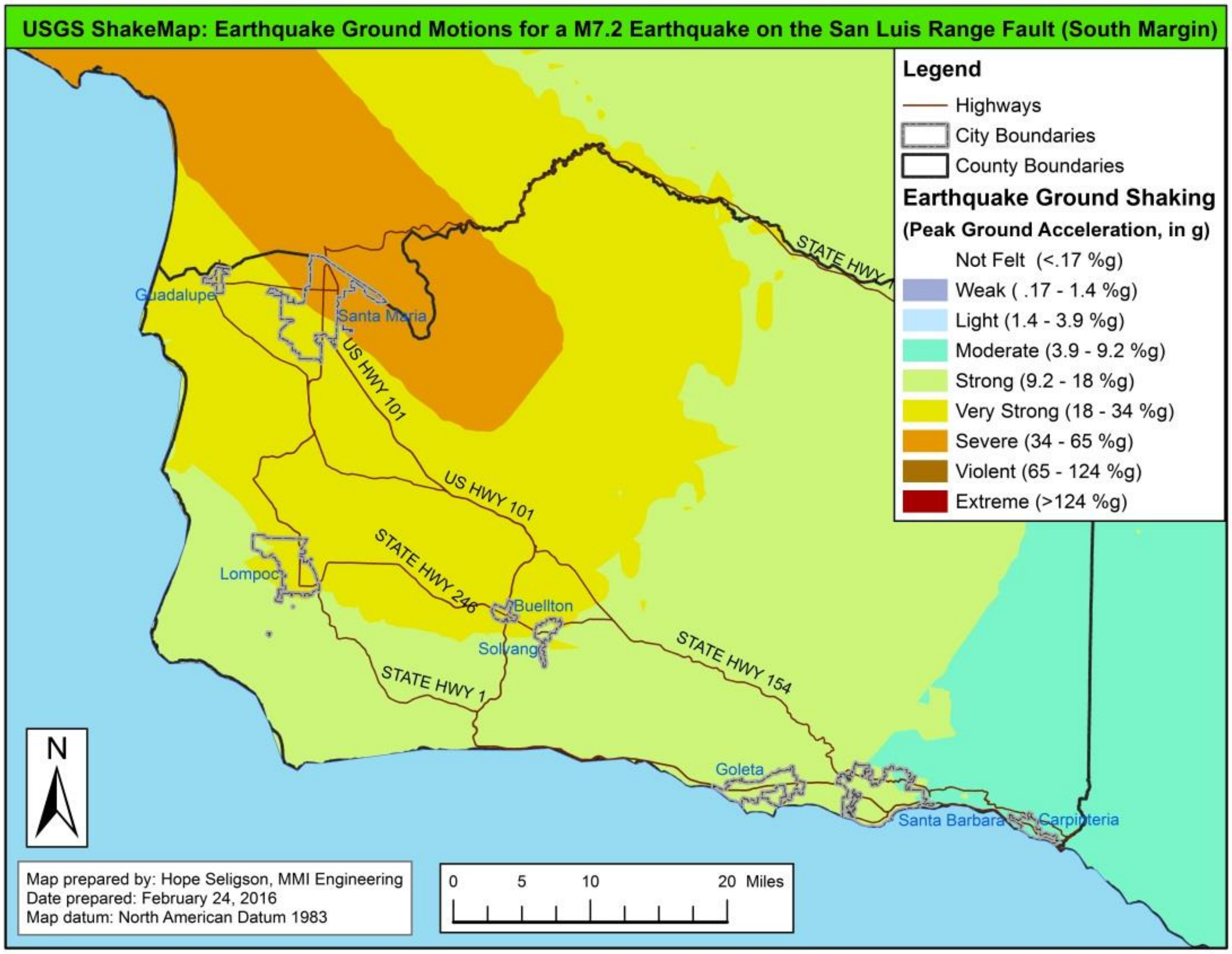


Figure 6.4 USGS Shake Map Ground Motions for Santa Barbara County for a M7.2 Earthquake on the San Luis Range Fault, South Margin (Scenario 2)



As noted above, the latest version of Hazus (Hazus 3.0, released in November, 2015) was used to conduct county-wide earthquake risk assessments. The Hazus results, computed at the census tract level, were aggregated to produce city-level impact summaries. An overview of the county-wide results for both scenarios is provided in **Table 6.7**, along with the sub-set of results that represent the unincorporated county areas. As shown, the M7.4 Red Mountain Fault earthquake scenario (which impacts the southern part of the county) generates more building damage and loss in the County and in the unincorporated county areas, than the M7.2 San Luis Range Fault earthquake scenario (which impacts the northern part of the County).

Table 6.8 provides a breakdown of estimated building damage (building count by Hazus damage state) by general building type, allowing for an understanding of the distribution of predicted damage in the modeled scenarios.

Functionality of essential facilities included in the Hazus default database (with additional fire station facilities added) in the two scenario earthquakes is summarized in **Table 6.9** for Santa Barbara County and the unincorporated county areas.

Table 6.7 Estimated Impacts for Two Earthquake Scenario Events Affecting Santa Barbara County

		Santa Barbara County		Unincorporated County	
		M7.4 Red Mountain	M7.2 San Luis Range South Margin	M7.4 Red Mountain	M7.2 San Luis Range South Margin
Direct Economic Losses for Buildings ($1,000)					
	Total Building Exposure Value	**44,224,855**		**14,933,445**	
Capital Stock Losses	Cost of Structural Damage	434,128	92,238	128,706	13,032
	Cost of Non-Structural Damage	1,782,698	431,791	523,679	74,652
	Total Building Damage	2,216,826	524,029	652,385	87,684
	Building Loss Ratio %	5.0%	1.2%	1.5%	0.2%
	Cost of Contents Damage	688,049	176,643	203,969	33,472
	Inventory Loss	15,507	3,463	4,589	572
Income Losses	Relocation Loss	186,261	39,827	50,432	3,947
	Capital-Related Loss	129,318	23,692	28,078	1,716
	Rental Income Loss	116,283	21,160	27,103	1,772
	Wage Losses	157,673	31,615	36,784	1,953
	Total Direct Economic Loss	**3,509,917**	**820,429**	**1,003,339**	**131,116**
	% Of Countywide Loss	**100.0%**	**100.0%**	**28.6%**	**16.0%**
Casualties					
Day Casualties	**Casualties - 2 pm**				
	Level 1 - minor injuries, basic first aid	1,163	288	335	21
	Level 2 - hospital treat & release	297	63	82	3
	Level 3 - injuries requiring hospitalization	47	9	13	0
	Level 4 - fatalities	87	17	23	0
	Total Casualties	**1,594**	**377**	**453**	**24**
Night Casualties	**Casualties - 2 am**				
	Level 1 - minor injuries, basic first aid	467	138	162	12
	Level 2 - hospital treat & release	94	20	31	1
	Level 3 - injuries requiring hospitalization	11	2	3	0
	Level 4 - fatalities	21	3	6	0
	Total Casualties	**593**	**163**	**202**	**13**
Shelter					
Shelter	Displaced Households	2,485	355	669	6
	People Requiring Short-term Shelter	1,719	367	528	3

Debris (thousands of tons)					
Debris	Brick, Wood & Other (Light) Debris	240	61	76.4	8.0
	Concrete & Steel (Heavy) Debris	592	99	153.3	7.8
	Total Debris	**832**	**160**	**229.7**	**15.8**

Table 6.8 Estimated Building Damage (Building Count by General Building type, by Damage State) for Two Earthquake Scenario Events Affecting Santa Barbara County

		Santa Barbara County		Unincorporated County	
		M7.4 Red Mountain	M7.2 San Luis Range South Margin	M7.4 Red Mountain	M7.2 San Luis Range South Margin
Concrete	None	1,035	1,922	248	547
	Slight	502	258	144	51
	Moderate	479	140	136	20
	Extensive	255	59	68	5
	Complete	125	18	27	1
	TOTAL	**2,396**	**2,397**	**623**	**624**
Manuf. Housing	None	3,266	3,767	836	1689
	Slight	1,044	1,320	263	478
	Moderate	991	1,560	395	457
	Extensive	1,705	841	869	102
	Complete	665	184	370	7
	TOTAL	**7,671**	**7,672**	**2,733**	**2,733**
Precast Concrete	None	795	1,524	207	469
	Slight	320	242	103	58
	Moderate	541	178	161	28
	Extensive	265	48	71	5
	Complete	80	10	18	0
	TOTAL	**2,001**	**2,002**	**560**	**560**
Reinforced Masonry	None	1,978	3,231	567	1019
	Slight	672	330	212	68
	Moderate	815	222	241	29
	Extensive	300	64	82	5
	Complete	93	12	19	0
	TOTAL	**3,858**	**3,859**	**1,121**	**1,121**
Steel	None	977	1,985	249	604
	Slight	322	260	106	69
	Moderate	605	241	190	42
	Extensive	534	101	140	9
	Complete	170	22	41	1

	TOTAL	**2,608**	**2,609**	**726**	**725**
Unreinforced Masonry	None	259	534	56	152
	Slight	110	99	32	23
	Moderate	154	63	46	10
	Extensive	119	23	33	1
	Complete	84	8	19	0
	TOTAL	**726**	**727**	**186**	**186**
Wood Frame (Other)	None	888	1,604	240	491
	Slight	521	257	160	55
	Moderate	419	111	121	16
	Extensive	139	25	35	1
	Complete	32	4	7	0
	TOTAL	**1,999**	**2,001**	**563**	**563**
Wood Frame (Single-family)	None	64,022	86,952	23217	33919
	Slight	34,839	17,301	12745	4214
	Moderate	7,180	1,846	2342	191
	Extensive	68	12	20	1
	Complete	1	0	0	0
	TOTAL	**106,110**	**106,111**	**38,324**	**38,325**
ALL BUILDING TYPES	None	73,220	101,519	25,620	38,890
	Slight	38,330	20,067	13,765	5,016
	Moderate	11,184	4,361	3,632	793
	Extensive	3,385	1,173	1,318	129
	Complete	1,250	258	501	9
	TOTAL	**127,369**	**127,378**	**44,836**	**44,837**

Table 6.9 Predicted Essential Facility Functionality in Two Earthquake Scenario Events Affecting Santa Barbara County

		Santa Barbara County		Unincorporated County	
		M7.4 Red Mountain	**M7.2 San Luis Range South Margin**	**M7.4 Red Mountain**	**M7.2 San Luis Range South Margin**
Fire Stations	Functionality < 50 % on Day 1	20	5	8	1
	Functionality 50 - 75% on Day 1	1	6	0	2
	Functionality >75% Day 1	20	30	9	14
Police Stations	Functionality < 50 % on Day 1	6	2	5	1
	Functionality 50 - 75% on Day 1	1	2	1	1

	Functionality >75% Day 1	9	12	6	10
Public Schools	Functionality < 50 % on Day 1	54	18	10	2
	Functionality 50 - 75% on Day 1	1	17	1	8
	Functionality >75% Day 1	68	88	23	24

6.2.2 Flood and Coastal Storm Surge *(Medium Impact/High Probability)*

Hazus 3.0 was used to develop a flood depth grid for the 1-percent annual chance (100-year) flood, using Hazus 3.0 built-in, basic (i.e., Level 1) flood depth estimation methodology. The Hazus 3.0 flood hazard assessment methodology uses available information and local river and floodplain characteristics, such as frequency, discharge and ground elevation to estimate flood elevation, and ultimately flood depth. Digital elevation model (DEM) data with 30-meter resolution, available from the USGS' National Elevation Dataset (see: http://nationalmap.gov/elevation.html) has been utilized in the current assessment.

It should be noted that the flood depth grid generated by Hazus 3.0 ***is not*** equivalent to regulatory floodplain data contained in FEMA's Digital Flood Insurance Rate Maps (DFIRMs), which are the result of extensive, detailed engineering study. The Hazus-generated flood depth grid is a hypothetical representation of a potential flooding scenario, intended for non-regulatory uses. Further, it should also be noted that the DEM data used in the default analysis do not reflect the presence of channels and levees. A more detailed assessment would utilize higher resolution DEM data, such as LIDAR-based DEM data, and/or would require GIS-based revisions to the DEM to better reflect local flood control structures. Given that the Hazus 3.0 Level 1 approach does not consider the presence of levees, Hazus 3.0 loss and damage estimates produced for areas with levees (e.g., along the Santa Maria River) should be considered "worst-case" flood losses, reflecting potential flood damage that could occur in the event that the levees fail. Hazus-estimated flood depths across Santa Barbara County are provided in **Figure 6.5**.

An overview of the county-wide Hazus results for the 100-year flood scenario is provided in **Table 6.10**, along with the sub-set of results that represent the unincorporated county areas. **Table 6.11** provides a breakdown of estimated building damage (building count by percent damage range) by general occupancy. As shown, most of the flood-damaged buildings are single family homes. Functionality of essential facilities included in the Hazus default database (with additional fire station facilities added) in the flood scenario is summarized in **Table 6.12** for Santa Barbara County.

Figure 6.5 Hazus-Estimated Flood Depths for a 1-percent Annual Chance (100-year) Flood

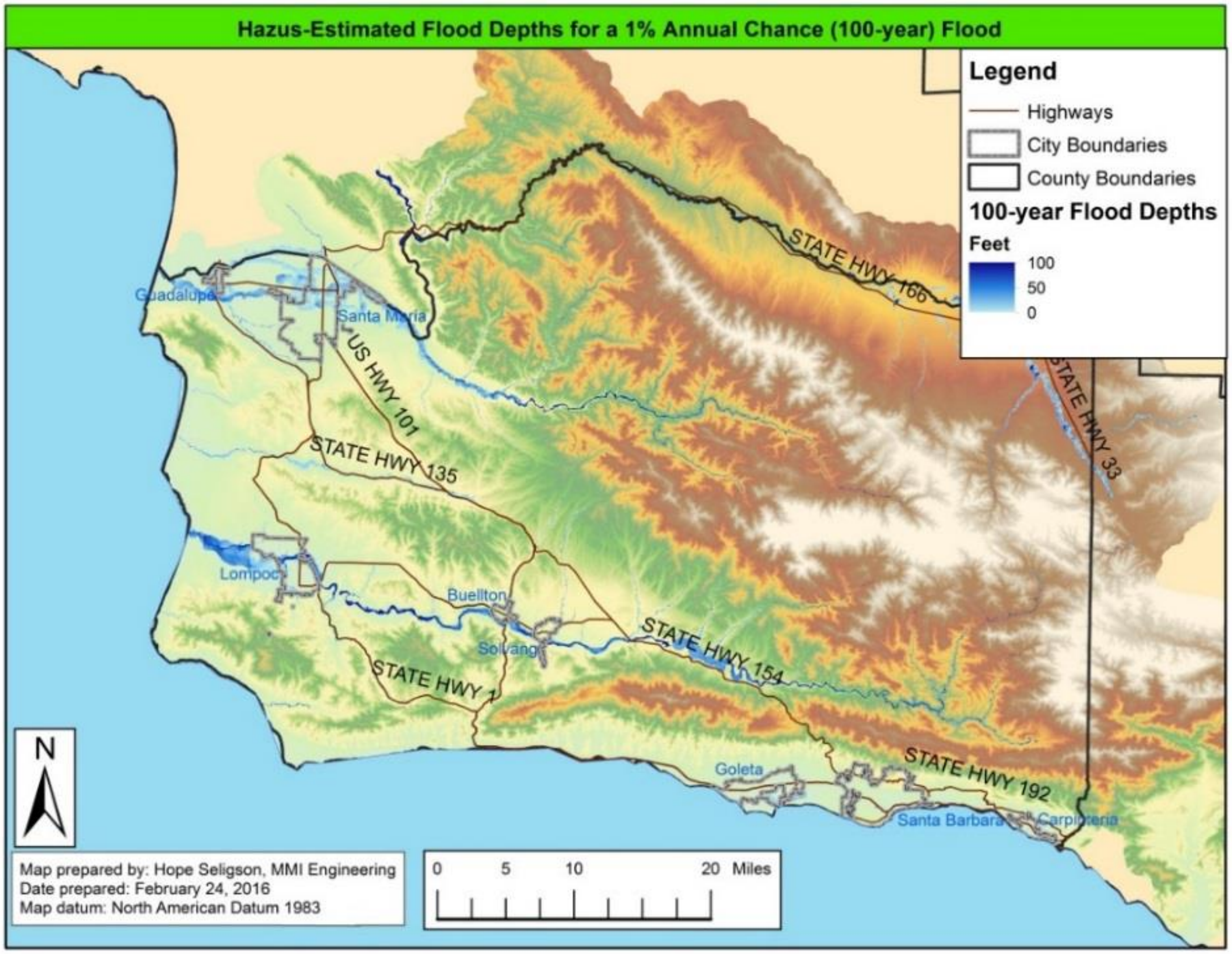


Table 6.10 Hazus -Estimated Impacts for the 1-Percent Annual Chance (100-Year) Flood Scenario Affecting Santa Barbara County

		Santa Barbara County	Unincorporated County
Direct Economic Losses for Buildings ($1,000)			
	Total Building Exposure Value	**44,224,855**	**14,933,445**
Capital Stock Losses	Total Building Damage	549,710	55,476
	Building Loss Ratio %	*1.2%*	*0.1%*
	Cost of Contents Damage	566,373	58,465
	Inventory Loss	9,022	1,397
Income Losses	Relocation Loss	1,624	112
	Capital-Related Loss	1,736	196
	Rental Income Loss	472	34
	Wage Losses	2,880	220
	Total Direct Economic Loss	**1,131,817**	**115,900**
	% Of Countywide Loss	**100.0%**	**10.2%**
Shelter			
Shelter	Displaced Population	57,963	2,918
	Number of People Requiring Short-term Shelter	54,248	2,262
Debris (thousands of tons)			
Debris	Finishes	41.3	4.6
	Structures	7.8	2.3
	Foundations	7.7	2.0
	Total Debris	**56.7**	**8.9**

Table 6.11 Estimated Building Damage (Building Count by General Occupancy, by Percent Damage Range) for a 1-percent Annual Chance (100-year) Flood Scenario Affecting Santa Barbara County

		Santa Barbara County	Unincorporated County
Building Damage Count in Flooded Census Blocks by Occupancy			
Single Family Homes	None	2,344	95
	1 - 10%	1,775	88
	11 - 20%	2,472	134
	21 - 30%	867	48
	31 - 40%	662	35
	41 - 50%	276	11
	Substantial Damage	196	9

	TOTAL	**8,592**	**420**
Manufactured Housing	None	208	11
	1 - 10%	14	1
	11 - 20%	29	1
	21 - 30%	31	1
	31 - 40%	0	0
	41 - 50%	19	1
	Substantial Damage	76	5
	TOTAL	**377**	**20**
Other Residential	None	70	0
	1 - 10%	8	0
	11 - 20%	23	0
	21 - 30%	8	0
	31 - 40%	0	0
	41 - 50%	0	0
	Substantial Damage	0	0
	TOTAL	**109**	**0**
Commercial	None	16	1
	1 - 10%	42	0
	11 - 20%	47	0
	21 - 30%	4	0
	31 - 40%	0	0
	41 - 50%	0	0
	Substantial Damage	0	0
	TOTAL	**109**	**1**
Building Damage Count in Flooded Census Blocks by Occupancy			
Industrial	None	0	0
	1 - 10%	1	0
	11 - 20%	4	0
	21 - 30%	0	0
	31 - 40%	0	0
	41 - 50%	0	0
	Substantial Damage	1	1
	TOTAL	**6**	**1**
Other Occupancies	None	4	0
	1 - 10%	6	0
	11 - 20%	1	0
	21 - 30%	0	0
	31 - 40%	0	0
	41 - 50%	0	0
	Substantial Damage	1	0

	TOTAL	**12**	**0**
ALL OCCUPANCIES	None	2,642	107
	1 - 10%	1,846	89
	11 - 20%	2,576	135
	21 - 30%	910	49
	31 - 40%	662	35
	41 - 50%	295	12
	Substantial Damage	274	15
	TOTAL	**9,205**	**442**

Table 6.12 Predicted Essential Facility Functionality for a 1-percent Annual Chance (100-year) Flood Scenario Affecting Santa Barbara County

		Santa Barbara County	**Unincorporated County Areas**
Fire Stations	# facilities located within flooded areas	5	1
	# facilities with Moderate or Greater Damage	2	1
	# facilities expected to be non-functional on Day 1	4	1
Police Stations	# facilities located within flooded areas	2	0
	# facilities with Moderate or Greater Damage	2	0
	# facilities expected to be non-functional on Day 1	2	0
Public Schools	# facilities located within flooded areas	12	2
	# facilities with Moderate or Greater Damage	2	0
	# facilities expected to be non-functional on Day 1	5	0

6.3 CRITICAL FACILITIES ANALYSIS

6.3.1 Flood and Coastal Storm Surge *(Medium Impact/High Probability)*

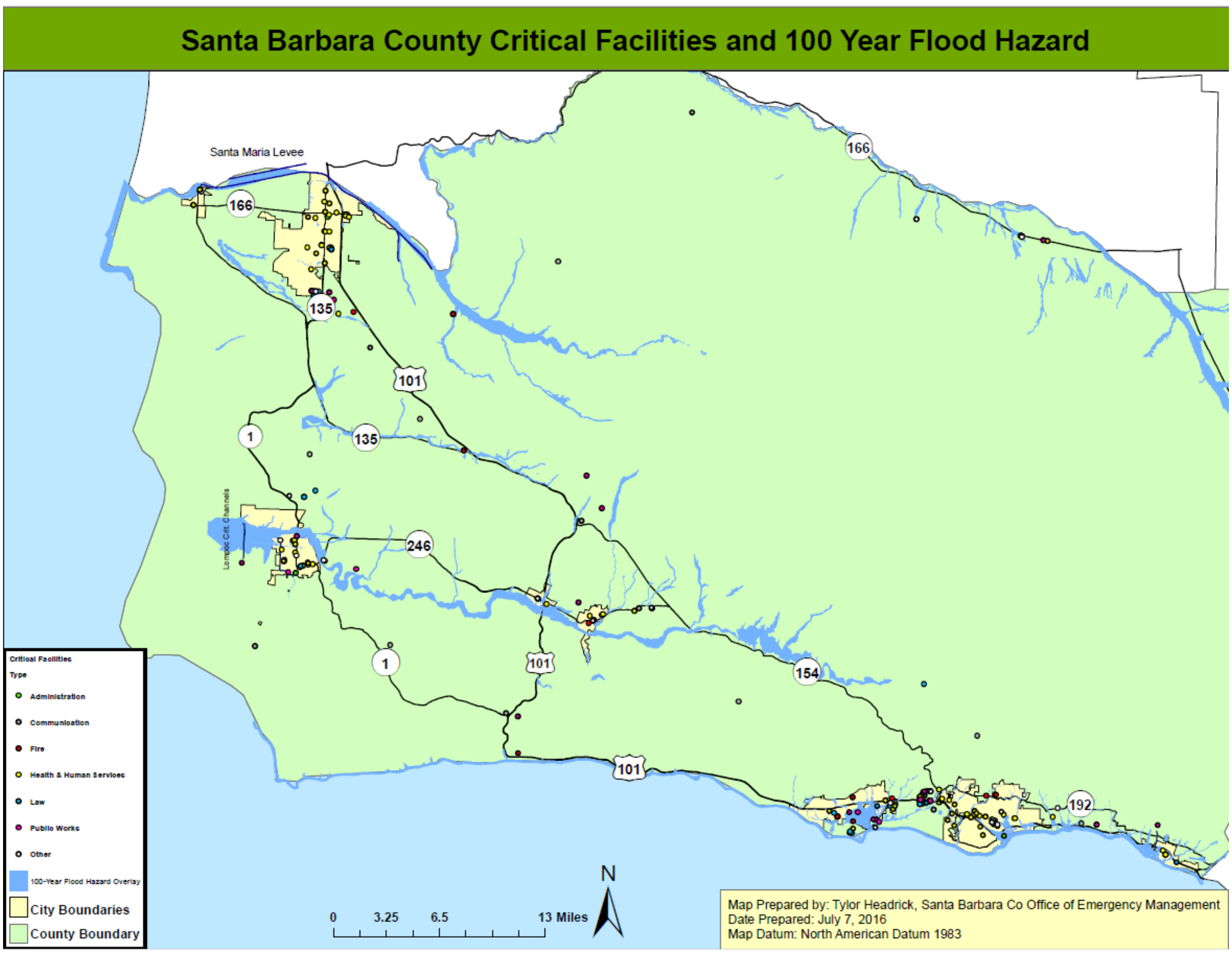
Although Flood and Coastal Surge damage was well delineated in the previous section (Scientific Loss Estimation modeling), the County Planning Team and the MAC wanted to include additional vulnerability data for the Critical Facilities. The exposure of the critical facilities to flood zones is summarized in **Table 6.13** and depicted on **Figure 6.6**.

Table 6.13 Critical Facilities by Category in Flood Zones

Critical Facility Category	100-Year	500-Year
Administrative	2	3
Communications	0	0
Fire	5	5
Health and Human Services	6	19
Law	9	9
Public Works	7	8
Other	0	4

*Some Critical Facilities are located in both a 100-year and 500-year Flood Zone.

Figure 6.6 Critical Facilities in 100 Year Flood Zone



6.3.1.1 Repetitive Loss (RL) Properties

Repetitive loss properties are defined as property that is insured under the NFIP that has filed two or more claims in excess of $1,000 each within any consecutive 10-year period since 1978. Currently, there are 35 repetitive loss structures in Santa Barbara County's unincorporated areas. Thirty three (33) of the 35 are located in the South Coast Flood Zone. The other repetitive loss property is a mobile home in the Lompoc Valley Flood Zone. An overview of repetitive loss areas in the County is presented in the map (**Figure 6.7**).

The RL properties in the South Coast Flood Zone are built on a narrow coastal strip which fronts on the Pacific Ocean. The seven mile long strip extends from Olive Mill Road in Montecito, east to Sandyland Cove Road near Carpinteria

Most of the land within this narrow coastal strip is designated Zone VE on the FIRMs. There is also V-Zone fronting the entire strip. Between these zones there is a small land area designated as A-Zones at the locations where six coastal creeks and the Carpinteria Slough empty into the ocean. This portion of the coast is periodically subject to high velocity wave action as was experience in January and March of 1983. The Base Flood Elevation (BFE) ranges from 11 to 27 feet NAVD88 along the coastal strip.

On the portion of the coastal strip RL area in the vicinity of the Carpinteria Slough, the V-Zone BFE is 11 feet NAVD88. During past flooding events, County personnel have observed flood elevations of approximately 10 to 11 feet (USGS MSL Datum) in the vicinity of the Carpinteria Slough. Since 1988 the County has been requiring lowest horizontal structural member to be elevated to 13.6 feet NAVD88 datum.

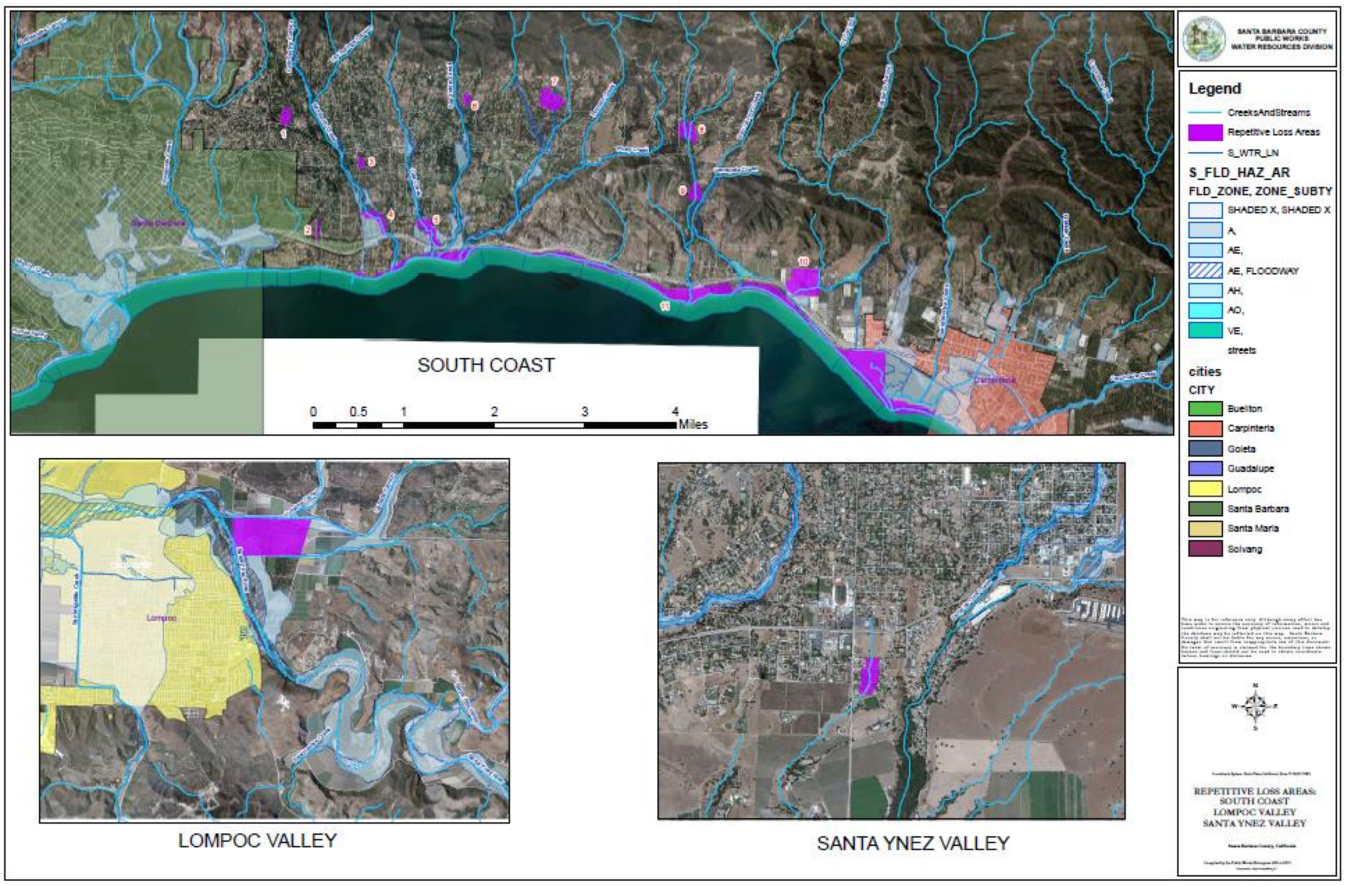
The 33 RL structures are among over 300 homes built in the area. With the exception of homes that have been substantially improved or razed and rebuilt, most of these homes were built prior to the County's participation in the CRS. Due to the very high value of homes in this area, it is infrequent that the substantial improvement threshold is met, requiring pre-FIRM structures to be brought into compliance with NFIP standards. There is little new development on the strip since the area is essentially built out. Because the parcels are small and the land amongst the most valuable in California there is a trend to maximize space in accordance with zoning regulations by addition additions, remodeling and occasionally tearing structures down and rebuilding.

Currently, there is one repetitive loss area in the Lompoc Valley Flood Zone. It is a post-FIRM elevated manufactured home in an un-numbered A- Zone. It was constructed in 1989 and elevated in accordance with the County NFIP Ordinance. The parcel on which the structure is situated is only partially within the SFHA. The owner of the property is not interested in relocating the manufactured home to a different location on the parcel.

Currently, there is one repetitive loss area in the Santa Ynez Valley Flood Zone. The parcel on which the structure is situated is not within the SFHA. There is an unmapped water course which is likely cause of flooding for this structure. The loss was a result of a significant storm event that occurred in the area in 2005.

Floodplain Management and Flood Mitigation Education and Outreach: The largest losses to the NFIP in Santa Barbara County are the 33 RL structures in the South County Coastal Basin. Options for dealing with those properties structurally are very limited. Hard protection such as groins, revetments, sea walls, etc. is economically unfeasible and generally not able to gain environmental permit approval. Acquisition and demolition is also not feasible, as these are among the most expensive and most desirable properties in California. Elevation and less extensive retrofits may be an alternative. However, with view-shed restrictions and the political implications of providing grant assistance to this type of property is unlikely. For these reasons, the County has developed multiple outreach and education strategies to encourage self- responsible actions in these areas and other flood prone areas in general. The County will target education and outreach programs to a variety of audiences to not only encourage retrofit and flood loss reduction activities but to encourage flood resistant future development.

Figure 6.7 Repetitive Loss Areas: South Coast, Lompoc Valley, Santa Ynez Valley



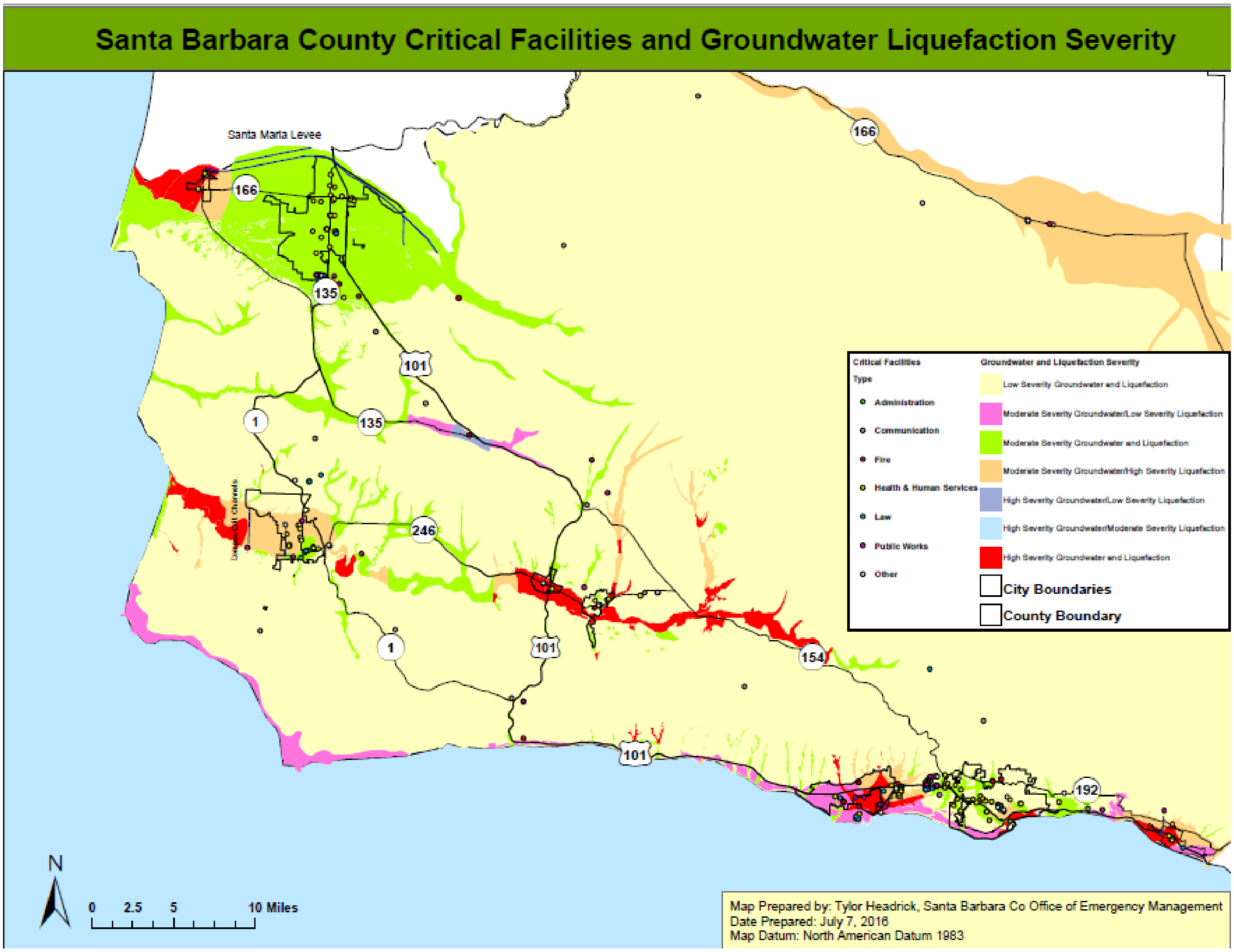
6.3.2 Groundwater Liquefaction *(High Impact/Medium Probability)*

Although Earthquake damage was well delineated in the previous section (Scientific Loss Estimation modeling), the County Planning Team and the MAC wanted to include additional vulnerability data for Groundwater Liquefaction Severity for Critical Facilities. The exposure of the critical facilities to flood zones is summarized in in **Table 6.14** and depicted in **Figure 6.7**.

Table 6.14 Critical Facilities by Category in Groundwater Liquefaction Zones (Level of Severity Groundwater/Level of Severity Liquefaction)

Critical Facility Category	moderate/low	moderate/moderate	moderate/high	high/low	high/high
Administrative	0	4	3	0	2
Communications	1	1	0	0	1
Fire	4	3	9	2	3
Health and Human Services	3	44	29	0	9
Law	4	14	7	0	1
Public Works	0	10	11	0	5
Other	0	2	5	0	2

Figure 6.8 Groundwater Liquefaction Severity Zones



6.3.3 Wildfire *(Medium Impact/High Probability)*

In looking at critical facilities' vulnerability to wildfire, there were three measures that were evaluated. The first is whether a critical facility is within the Fire Severity Zone (FSZ). The FSZ is mapped by the CA Department of Forestry and Fire Protection. It shows the geographic extents for areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. The second measure for vulnerability is the Wildland Urban Interface which is the potential treatment zone where projects could be conducted to reduce wildland fire threats to people. For the purposes of this analysis, "within the WUI" represents those critical facilities that are in the geographical area where the three factors of "threat to people", "communities at risk", and "distance to developed areas" intersect. The final measure is that of "Fire Threat". Fire Threat is a combination of the factors of fire frequency and potential fire behavior. The two factors are combined to create five (5) threat classes ranging from "Little or No Threat" to "Extreme". The exposure of the critical facilities to these three measures is indicated in the tables (**Table 6.14**, **Table 6.15**, and **Table 6.16**) and figures (**Figure 6.7**. **Figure 6.8**, and **Figure 6.9**) below. It is worth noting that all critical facilities have at least some threat from one or more of the three measures. Because of this, the exposure has been color coded low too high in a yellow, orange, red scheme to make it easier for the reader to discern the different designations.

Table 6.14 Critical Facilities by Category in Fire Hazard Severity Zone

Critical Facility Category	Moderate	High	Very High
Administrative	0	0	0
Communications	0	5	1
Fire	3	1	6
Health and Human Services	2	0	2
Law	0	0	3
Public Works	4	5	2
Other	2	3	2

Figure 6.9 Critical Facilities in Fire Hazard Severity Zone

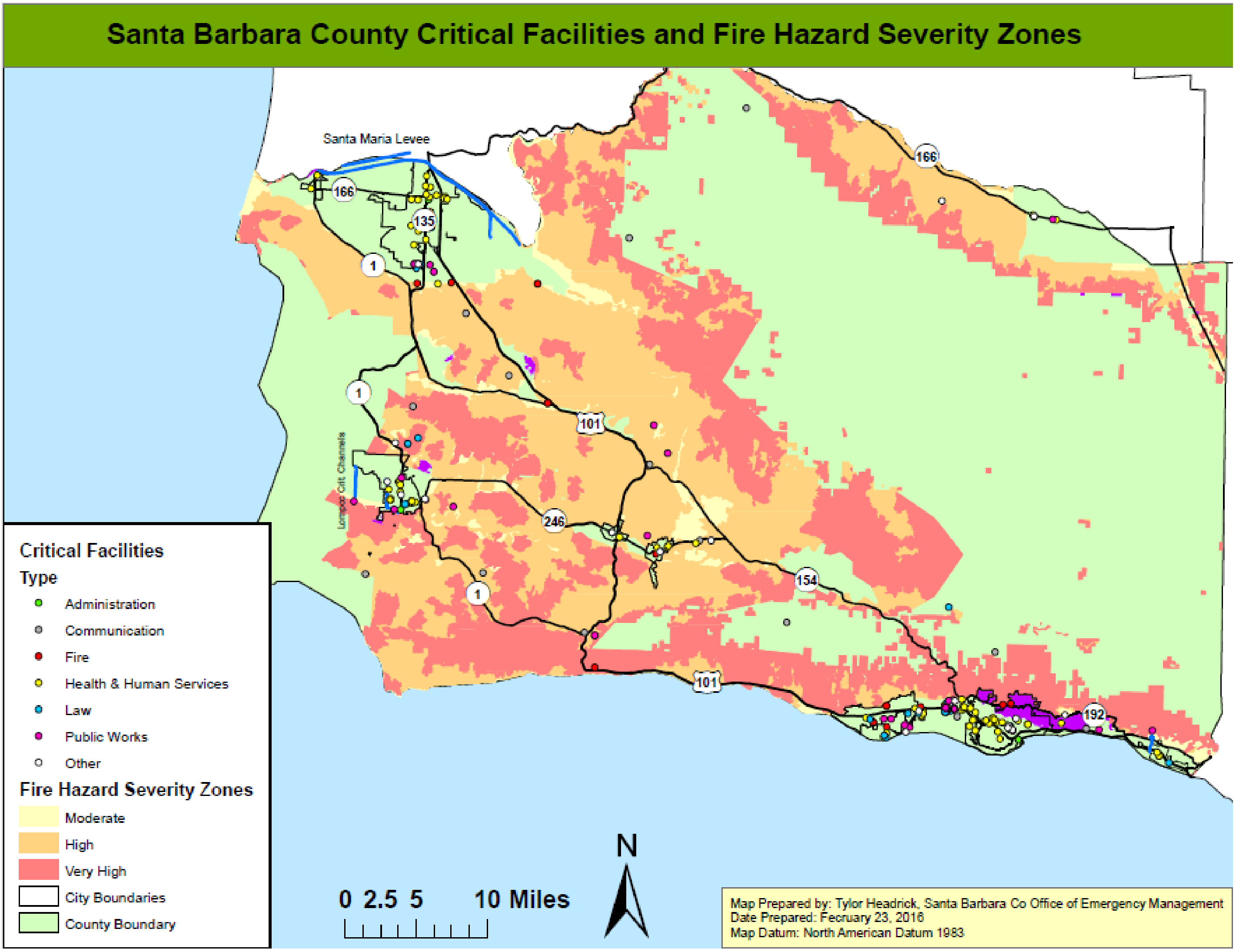


Table 6.15 Critical Facilities by Category in Wildland Urban Interface (WUI) Zone

Critical Facility Category	Within Zone
Administrative	11
Communications	14
Fire	28
Health and Human Services	87
Law	31
Public Works	32
Other	13

Figure 6.10 Critical Facilities in Wildland Urban Interface (WUI)

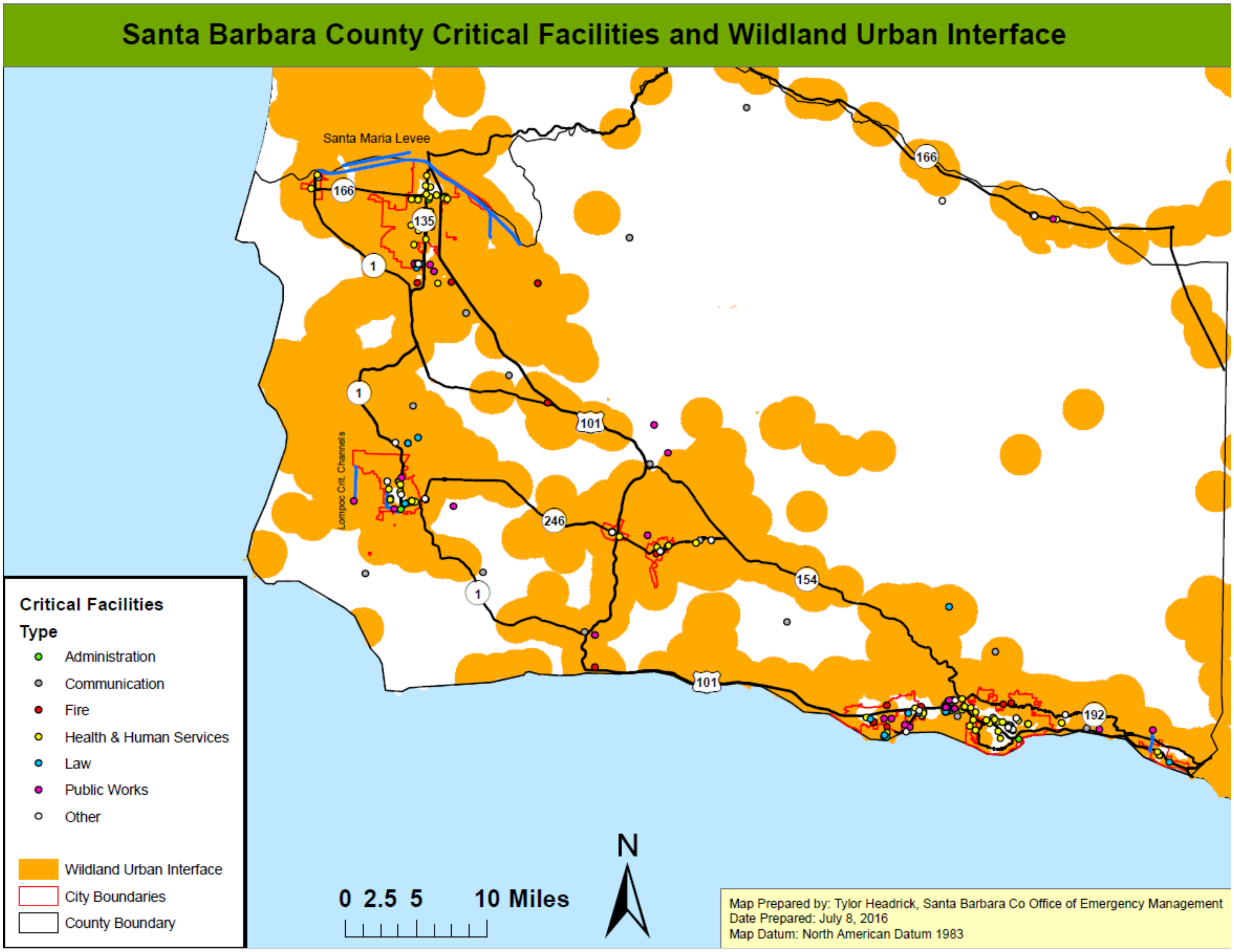
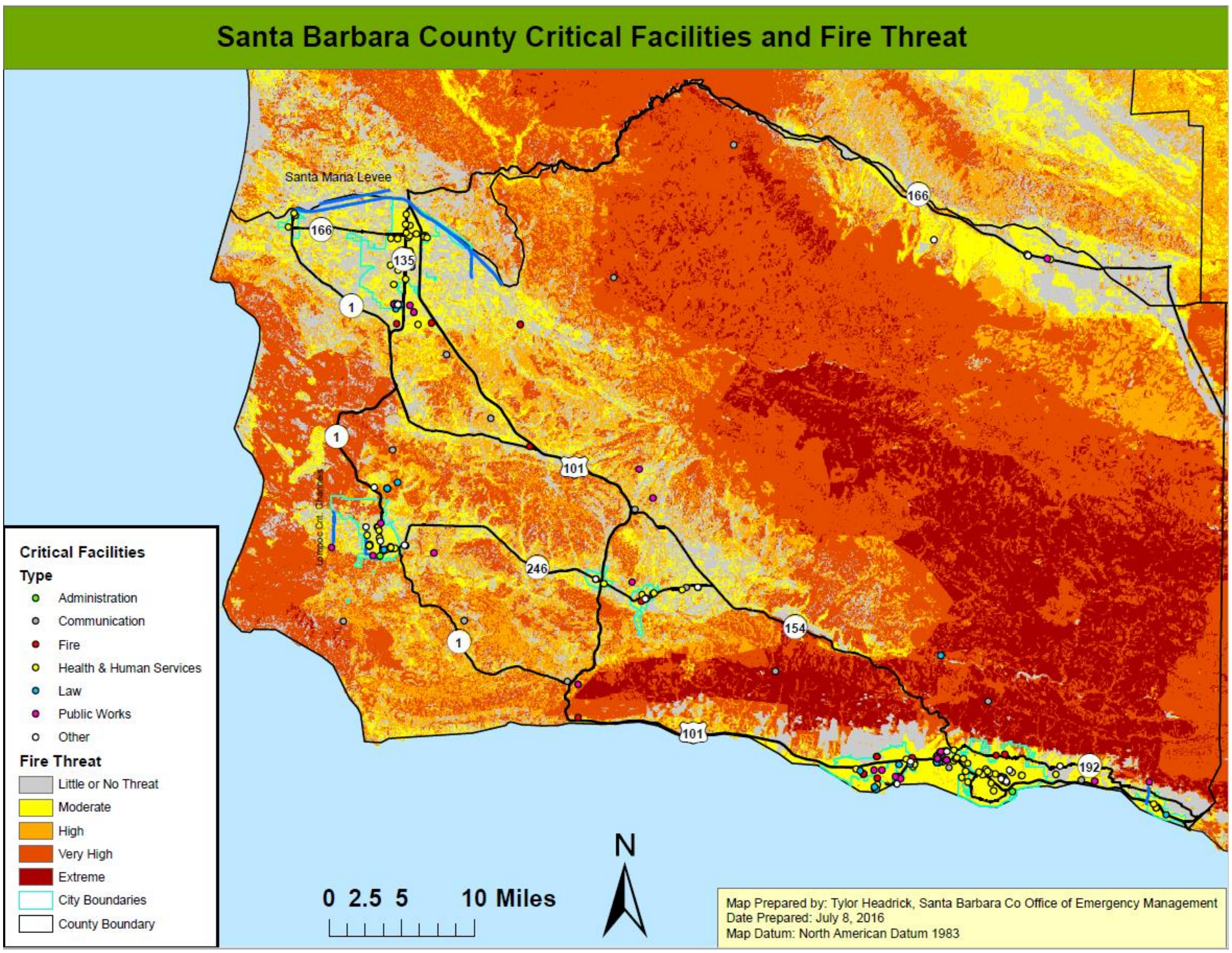


Table 6.16 Critical Facilities by Category in Fire Threat Zones

Critical Facility Category	Moderate	High	Very High	Extreme
Administrative	14	0	0	0
Communications	6	9	4	2
Fire	19	4	0	0
Health and Human Services	95	3	0	0
Law	29	4	1	0
Public Works	26	5	0	0
Other	15	2	0	0

Figure 6.11 Critical Facilities in Fire Threat Zones



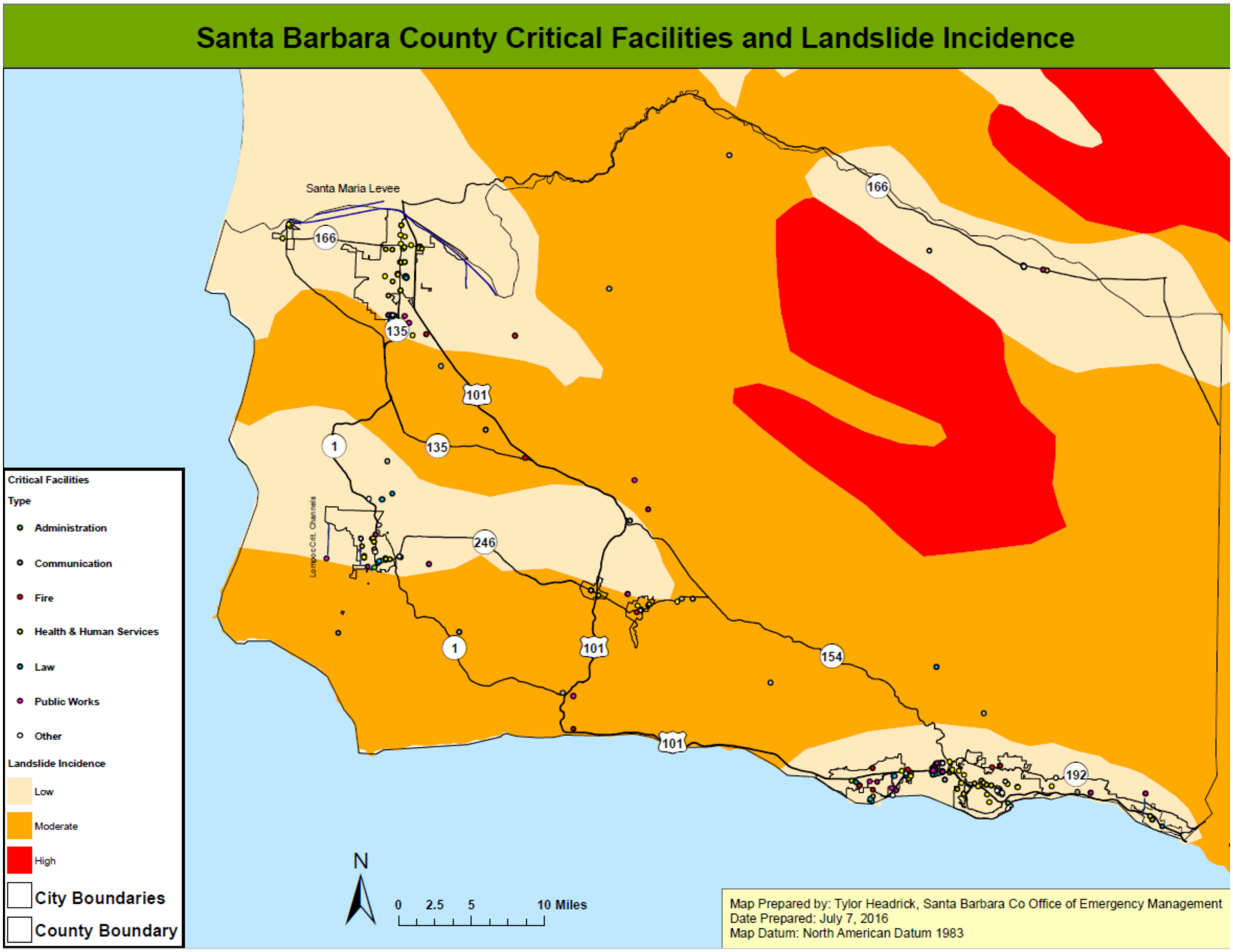
6.3.4 Landslide and other Earth Movement *(Medium Impact/High Probability)*

In an effort to assess vulnerability for landslides, data was collected from the United States Geological Survey (USGS) that represents landslide incidence and susceptibility. The geographies impacted are categorized into low, moderate, and high zones. These layers were intersected with the critical facilities to estimate exposure and show that there is approximately $14.4 million in structure value and just under $4 million in contents with at least moderate risk to landslides. The table below (**Table 6-17**) summarizes the total exposure and **Figure 6-10** depicts the location of those facilities that fall into a moderate risk. None of the County's critical facilities have a high risk of landslide vulnerability. All facilities not shown fall into the low risk category.

Table 6.17 Critical Facilities by Category in Landslide Zones

Critical Facility Category	Low	Moderate	High
Administrative	0	2	0
Communications	0	12	0
Fire	0	8	0
Health and Human Services	0	5	0
Law	0	2	0
Public Works	0	5	0
Other	0	4	0

Figure 6.12 Critical Facilities and Landslide Incidence



6.3.5 Sea Level Rise, Coastal Storm Surge and Erosion *(Medium Impact/High Probability)*

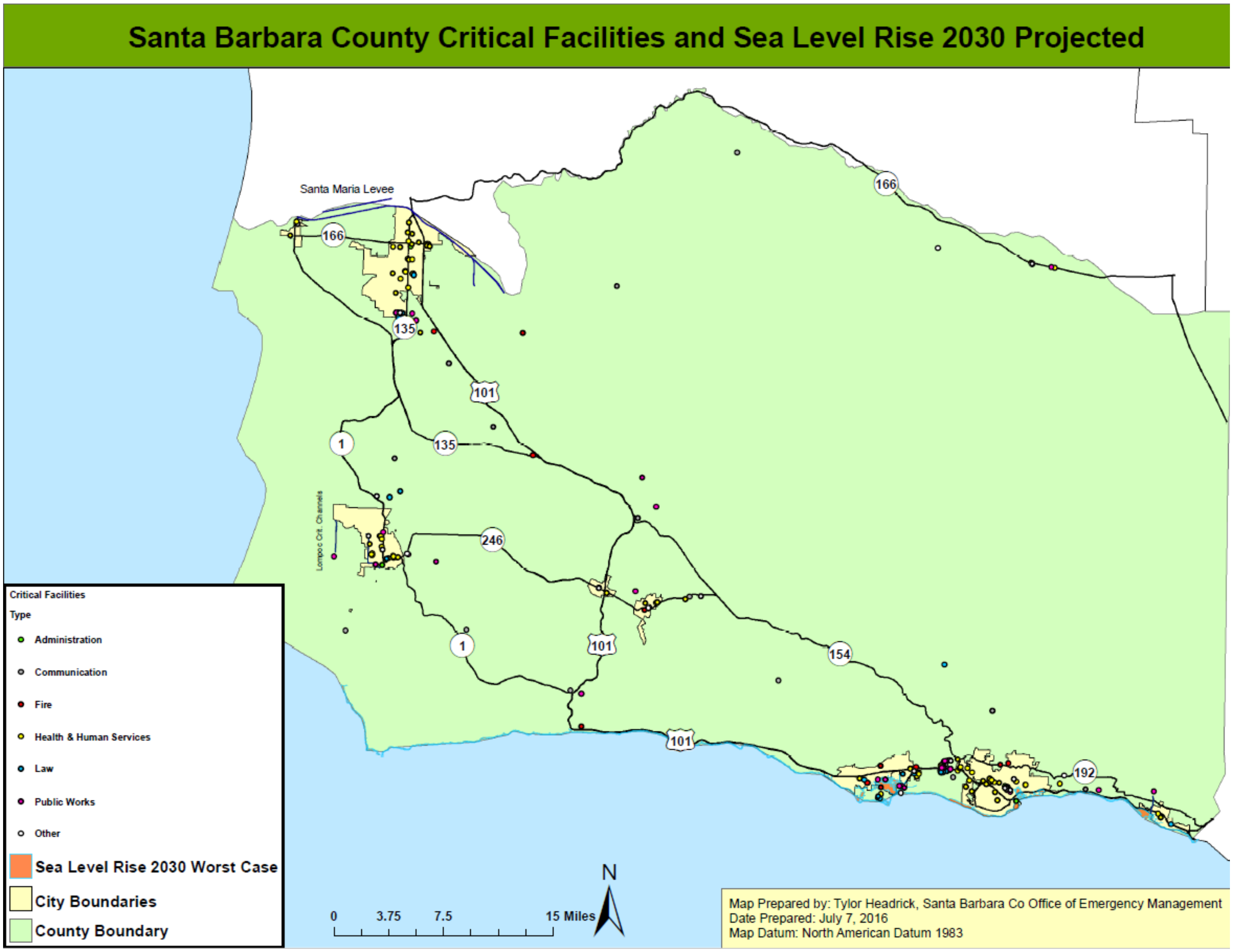
Santa Barbara County will be vulnerable to Sea Level Rise (SLR) along its coastline. SLR coupled with increased frequency, severity, and duration of high tide and storm events related to climate change will result in more frequent and severe extreme events along the coast. These events could expose the coast to severe flooding and erosion, damage to coastal Critical Facilities and real estate, and salinity intrusion into delta areas and coastal aquifers (Projecting Future Sea Level, A Report from the California Climate Change Center, 2006).

Table 6-18 illustrates the potential impact to Critical Facilitates from SLR, while **Figure 6.11** illustrates the vulnerability of the County's Critical Facilities to Sea Level Rise over the next 30 years.

Table 6.18 Critical Facilities by Category in SLR Zones

Critical Facility Category	Moderate
Administrative	0
Communications	0
Fire	0
Health and Human Services	0
Law	0
Public Works	2
Other	1

Figure 6.13 Critical Facilities and Sea Level Rise



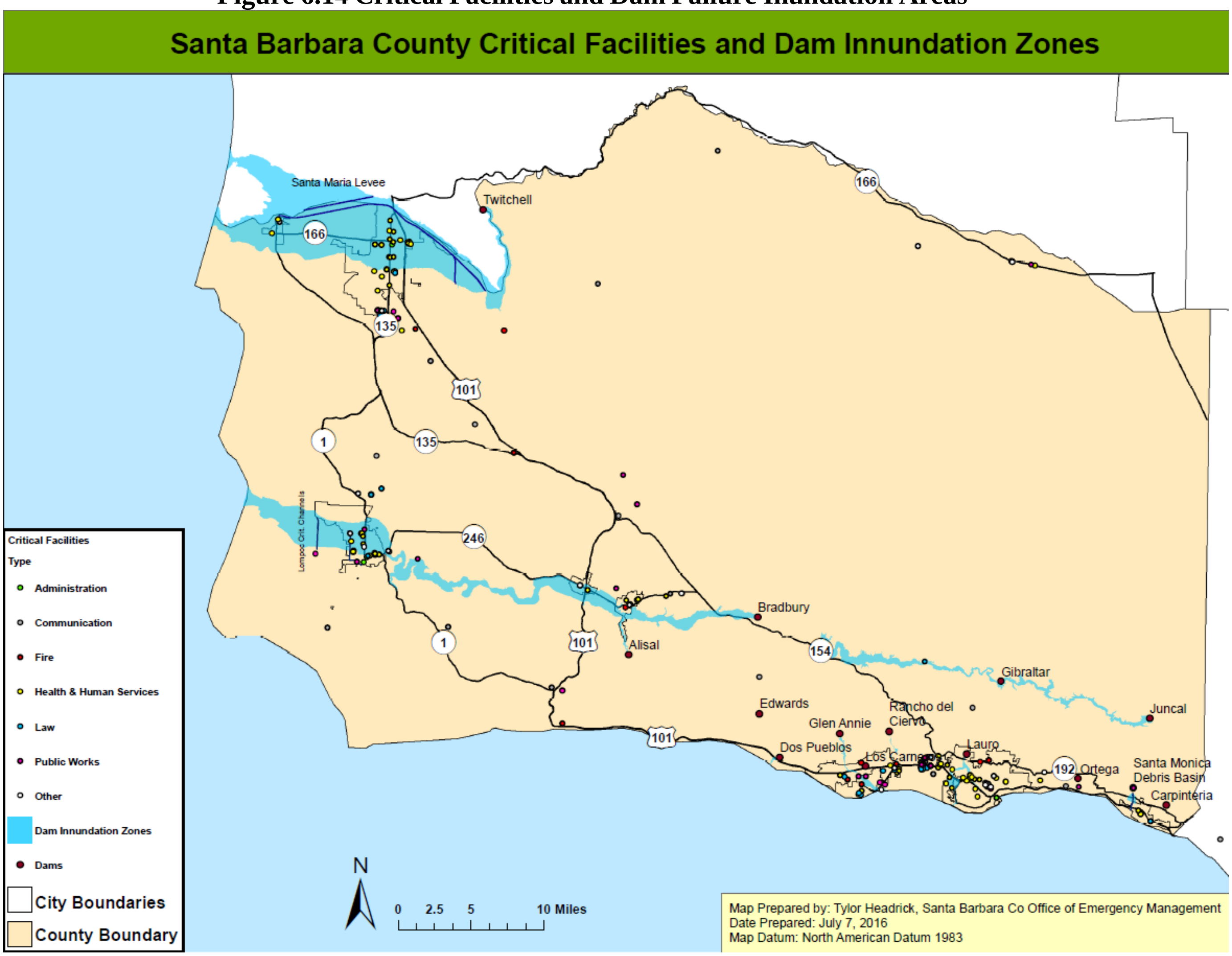
6.3.6 Dam Failure *(High Impact/Low Probability)*

There are nine major dams in the County: Alisal Creek, Bradbury, Dos Pueblos, Gibraltar, Glen Anne, Juncal, Ortega, Rancho Del Ciervo, and Twitchell. Bradbury dam has the largest concern of failure because floodwaters from this dam would affect Cachuma Village, Solvang, Buellton, Lompoc City, Lompoc Valley, and south Vandenberg AFB. A failure of the remaining eight (8) dams would affect portions of populated cities and communities, forest and agricultural lands, roads, and highways. The dam failure vulnerability is simply a look at those critical facilities exposed to risk as indicated by whether they fall into a geographic region that represents a dam inundation zone. There are 39 County critical facilities within the dam inundation zones. The 39 critical facilities represent approximately $400 million in building value and almost $35 million in contents exposed to the risk (**Table 6-19**); however, over half of the critical facilities, nineteen (19) of the 39 at risk facilities, did not have any dollar information available. **Figure 6-12** depicts the location of the critical facilities in relation to the dam failure inundation zones.

Table 6.19 Critical Facilities by Category in Dam Inundation Zones

Critical Facility Category	Bradbury	Dos Pueblo	Gibraltar	Glenn Annie	Lauro	Rancho	Santa Monica	Twitchell
Administrative	0	0	0	0	0	0	0	1
Communications	0	0	0	0	0	0	0	1
Fire	2	0	0	0	0	0	0	0
Health and Human Services	10	0	0	0	2	0	0	22
Law	1	0	1	0	0	0	0	0
Public Works	1	0	0	1	0	0	0	0
Other	4	0	0	1	0	0	0	0

Figure 6.14 Critical Facilities and Dam Failure Inundation Areas



6.3.7 Tsunami *(Medium Impact/Low Probability)*

Tsunami waves travel at speeds averaging 450 to 600 miles per hour. As a tsunami nears the coastline, its speed diminishes, its wavelength decreases, and its height increases. Depending on the type of event that creates the tsunami, as well the remoteness of the event, the tsunami could reach land within a few minutes or after several hours. Low-lying areas could experience severe inland inundation of water and deposition of debris more than 3,000 feet inland.

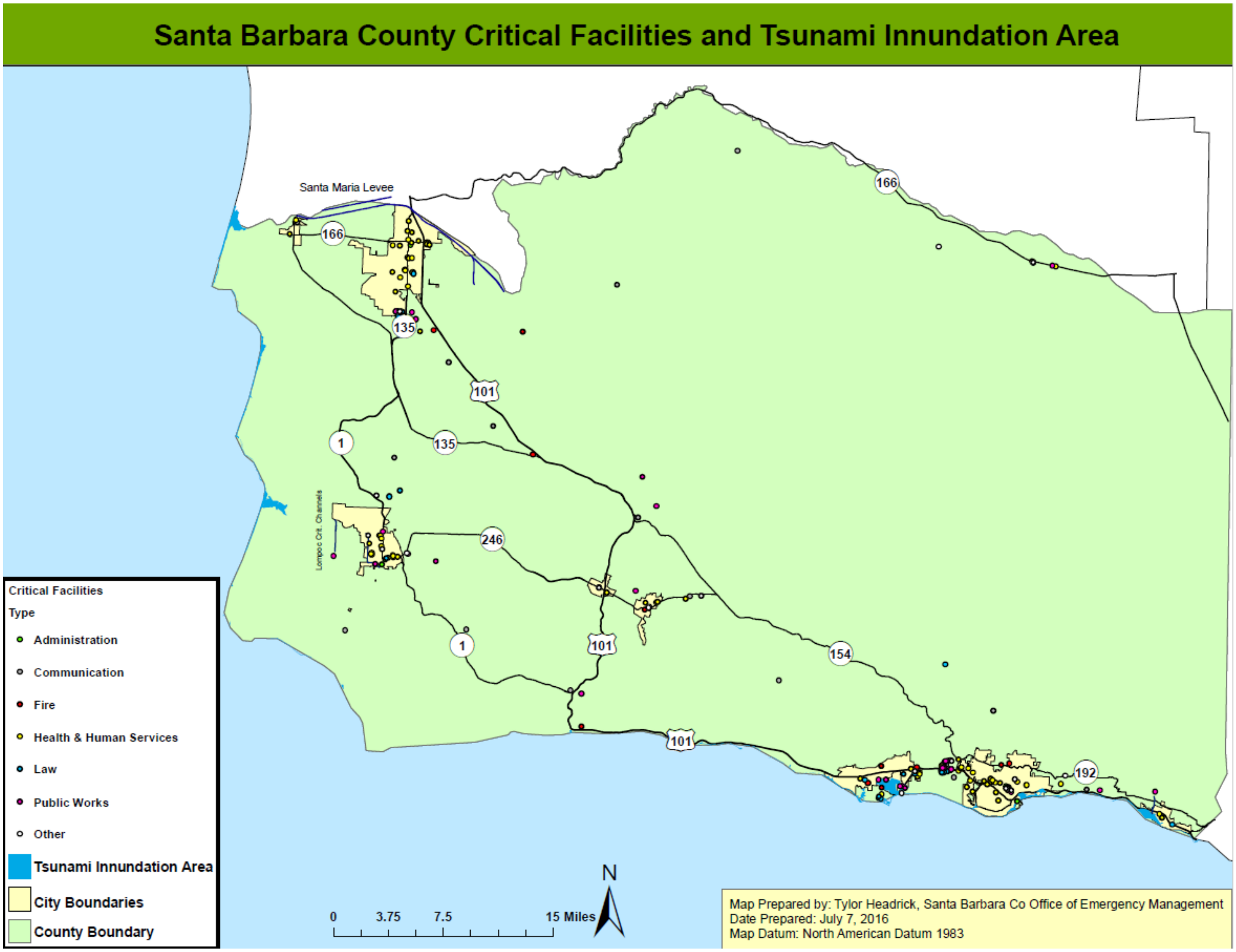
The University Of Southern California Tsunami Research Group has modeled areas in Santa Barbara County that could potentially be inundated in the event of a tsunami. This model is based on potential earthquake sources and hypothetical extreme undersea, near-shore landslide sources were mapped and used to profile maximum potential exposure.

Critical facilities provided by the County were compared against the extreme tsunami inundation zone overlay to see whether they fell within the geographic extent of the hazard. When the structures were compared to the tsunami hazard areas, only one (the Goleta Pier) of the XXX facilities fell within the risk area. The Goleta Pier has an estimated structure value of approximately $6.4 million with no dollar value provided for content costs (**Table 6-21**). **Figure 6-14** depicts the location of the critical facilities in relation to the extreme tsunami inundation zone.

Table 6.21 Critical Facilities by Category in Extreme Tsunami Inundation Zone

Critical Facility Category	Total Buildings	Building Value	Content
Administrative	1	6,141,305	70,387
Communications	0	0	0
Fire	0	0	0
Health and Human Services	0	0	0
Law	0	0	0
Public Works	3	0	0
Other	1	6,386,203	0

Figure 6.15 Critical Facilities and Tsunami Inundation Areas



6.4 QUALITATIVE ESTIMATE OF IMPACTS ANALYSIS

6.4.1 Drought and Water Shortage *(Medium Impact/High Probability)*

A drought is present when a region receives below-average precipitation, resulting in prolonged shortages in its water supply, whether atmospheric, surface, or ground water. A drought can last for months or years, or may be declared after as few as 15 days. The effects of the drought are most visible in the Santa Barbara County when looking at the current capacity and maximum storage of the two main water reservoirs in the county, Lake Cachuma and Twitchell. On February 16, 2016, Cachuma was reported to be at 14.9% capacity, and Twitchell was at 0.2% capacity.

Climate change has the potential to make drought events more common in California, including Santa Barbara. Extreme heat creates conditions more conducive for evaporation of moisture from the ground, increasing the possibility of drought. A warming planet could lead to earlier melting of winter snow packs, leaving lower stream flows and drier conditions in the late spring and summer. Snow packs in northern California are important for water storage and ensuring adequate supply in the summer months when water is most needed. Changing precipitation distribution and intensity have the potential to cause more of the fallen precipitation run-off rather than be stored. The result is an increased potential for more frequent and more severe periods of drought.

Past experience with Santa Barbara droughts tells us that drought impacts are felt first by those most dependent on or affected by annual rainfall – fire departments, ranchers engaged in dryland grazing, rural residents relying on wells in low-yield rock formations, or other small water systems lacking a reliable water source. Drought and water shortage can happen countywide; and have significant impacts on the populations and the economy. Significant economic impacts on Santa Barbara's agriculture industry can occur as a result of short- and long-term drought conditions; these include hardships to farmers, farm workers, packers, and shippers of agricultural products. In some cases, droughts can also cause significant increases in food prices to the consumer due to shortages. Drought can also result in lack of water and subsequent feed available to grazing livestock, potentially leading to risk of livestock death and resulting in losses to the Santa Barbara's agricultural economy.

Drought can have secondary impacts. For example, drought is a major determinant of wildfire hazard, in that it creates greater propensity for fire starts and larger, more prolonged conflagrations fueled by excessively dry vegetation, along with reduced water supply for firefighting purposes.

6.4.2 Levee Failure *(Medium Impact/Low Probability)*

The stability of levees is a function of several variables: water level change, ground shaking, and static loading. Water level changes can be due to peak flood levels or rapid draw-down; both are known to adversely affect the stability of levees. Ground shaking is a function of earthquakes in and around the levees but can occur up to 100 kilometers or more away and still affect levee performance. Static loading represents the nominal loading conditions that regularly exist, but documented levee failures have occurred with no adverse conditions other than static loading (for example, with the Jones Tract failure in 2004).

6.4.3 Severe Weather (Medium Impact/High Probability)

6.4.3.1 Extreme Heat

Extreme heat can have significant impacts on populations, lifeline infrastructure, and the economy. These events can highlight the importance of thoughtful social vulnerability analyses, consideration for socially isolated elderly populations, and illustrate how seemingly unrelated phenomena combine to create disaster. An example is when increased use of air conditioners during heat waves can lead to power outages, which makes the events even more deadly.

The California Climate Adaptation Strategy (CAS), citing a California Energy Commission study, states that "over the past 15 years, heat waves have claimed more lives in California than all other declared disaster events combined." For example, the 1989 Loma Prieta Earthquake resulted in 63 deaths, the 1992 Northridge Earthquake was responsible for the loss of 55 lives, and the 2003 Southern California Firestorms resulted in 24 deaths; however, the worst single heat wave event in California occurred in Southern California in 1955, when an eight-day heat wave is said to have resulted in 946 deaths. The July 2006 heat wave in California caused the deaths of about 140 people over a 13-day period.

Because of this, the following groups could be considered vulnerable or at greater risk in a heat emergency:

- People with developmental/intellectual disabilities - refers to a severe and chronic disability that is attributable to a mental or physical impairment that begins before an individual reaches adulthood. These disabilities include cerebral palsy, epilepsy, mobility and autism.
- Blind/low vision
- Deaf/Hard of hearing
- Mobility Injuries: from auto accidents, falls, sports, and or war. These injuries can cause damage to the brain, spinal cord, hearing, sight and mobility
- Chronic Conditions: Diabetes, Arthritis, dialysis, asthma and epilepsy
- Older adults: Have age-related limitations. (move slower, sight and sound limitations, etc.)
- Children: Challenges include dependency not only for care, but decision-making, processing information and trauma differently than adults, they may be unable to articulate their needs, may decompensate faster than adults, and are generally more susceptible to thirst, hunger, temperature, etc. than adults.
- Animals, including domestic pets, livestock, and poultry are also susceptible to extreme heat. For example, dogs and cats are in danger of heat stroke in temperatures of 110°F. The heat wave of 2006 resulted in 15 reported pet deaths and more than 25,000 cattle, and 700,000 fowl heat- related deaths. Heat wave impacts to livestock can lead to financial losses in California's agricultural economy.

The Spatial Hazard Events and Loss Data for the United States (SHELDUS), estimates that approximately 47 heat events occurred in California between the years 1960 and 2008. Adjusted to 2008 dollars, SHELDUS reports that severe heat events in California caused roughly $1.8 million in property damage and $531.7 million in crop damage.

6.4.3.2 Freeze

Sustained temperatures below freezing in Santa Barbara's generally mild weather regions can cause life loss and health risks to vulnerable populations; and have significant impacts on the lifeline infrastructure and the economy. Similar to Extreme Heat events, the same populations, lifeline infrastructure, and parts of the economy are vulnerable to and could be impacted by Freeze events.

Although infrequent, freezes can severely affect Santa Barbara agriculture. Freezing temperatures occurring during winter and spring growing seasons can cause extensive crop damage. Secondary impacts of freeze disasters can include major economic impacts on farmers, farm workers, packers, and shippers of agricultural products. Freezes can also cause significant increases in food prices to the consumer due to shortages. Freezing spells are likely to become less frequent as climate temperatures increase; if emissions follow higher pathways, freezing events could occur only once per decade in a sizable portion of the state by the second half of the 21st century. While fewer freezing spells would decrease cold-related health effects, too few freezes could lead to increased incidence of disease as vectors and pathogens do not die off.

6.4.3.3 Hailstorm

Hailstorms are rare in Santa Barbara County and as such represent a relatively low risk for most areas, compared to areas in the Midwest and southern United States where risk exposure is severe and many lives and millions of dollars are lost annually due to this hazard. In the event of a large hailstorm event, it is not expected to have significant impact on the population, built environment, lifeline infrastructure, or the economy.

6.4.3.4 Hurricane

Santa Barbara County is at very low risk of hurricanes, although it is possible for one to threaten the Southern California coast. No hurricanes have hit California in recorded history because tropical storm winds generally blow from east to west. California is affected by heavy rain resulting from tropical winds that blow north from Mexico and become colder by the time they hit California. In the future, monitoring is needed to determine whether present patterns of movement of such storms continue or are modified by the warming of waters off the Pacific Coast due to climate change. In the unlikelihood of a significant event, hurricanes would have a considerable impact on the population, built environment, lifeline infrastructure, and the economy.

6.4.3.5 Tornado

While Santa Barbara has tornadoes, such events represent a relatively low risk for most areas, compared to areas in the Midwest and southern United States where risk exposure is severe and many lives and millions of dollars are lost annually due to this hazard. However, in the unlikelihood of a significant tornado event it is expected to have a considerable impact on the population, built environment, lifeline infrastructure, and the economy.

6.4.3.6 Windstorm

In the likelihood of a significant event, windstorms, especially Sundowner winds, could have a considerable impact on the population, built environment, lifeline infrastructure, and the economy. Sundowner winds adversely affect fire weather

6.4.4 Energy Shortage and Energy Resilience *(Medium Impact/High Probability)*

Energy disruptions are considered a form of lifeline system failure. Disruptions can be the consequence of another hazard, or can be a primary hazard, absent of an outside trigger. Santa Barbara County has two power providers. Pacific Gas and Electric provides electricity in the northern part of the county, with termination of services north of the Gaviota area. Southern California Edison provides power to the Southern part of the county, with service terminating in Gaviota. The two systems are not connected. Thus, if there is a major interruption of service in the Santa Barbara area, then all service is denied west of the outage to Gaviota. Likewise, if there is a major interruption of service coming from the north, power south to Gaviota from the outage may be affected.

Santa Barbara continues to experience both population growth and weather cycles that contribute to a heavy demand for power. Predicted increases in heat waves as well as increasingly severe winter storms will put ever greater strain on Santa Barbara’s two electricity providers and the Southern California Gas Company. In the event of a significant energy shortage it will have a significant impact on the population, built environment, lifeline infrastructure, and the economy.

6.4.5 Oil Spill *(Medium Impact/High Probability)*

In the event of a significant oil spill it will have a significant impact on the environment and the economy. The environmental impacts contribute to short- and long-term impacts on economic activities in areas affected by oil spills. Moratoriums may be temporarily imposed on fisheries, and tourism may decline in beach communities, resulting in economic hardship on individuals dependent on those industries for their livelihood and on the economic health of the community as well.

6.4.6 Agricultural Pests and Disease *(Low Impact/High Probability)*

A significant agricultural pest or disease event will have an impact on the environment and the local economy. The actual acreage of agriculture in Santa Barbara County exposed to pests and disease, as well as other hazards, is 546,512.61 acres including 138,723.18 acres of crop land.

6.4.7 Epidemic/Pandemic/Vector Borne Disease *(Low Impact /Medium Probability)*

The county, as well as the state and country, are vulnerable to epidemics or pandemics caused by either newly emerging or existing diseases spread person to person, through a vector such as a mosquito, or both. A significant epidemic or pandemic disease event can have considerable impact on the population, the economy, and essential public services. The county's pandemic influenza disease response plan, developed in 2007 through the coordination efforts of county departments and partner agencies, established a solid foundation for improved coordination and intervention by all participants. Implementation of this plan for an influenza pandemic or other epidemic or pandemic disease event would enable county departments to fulfill their significant roles and responsibilities through a coordinated strategy aimed at protecting the public's health and minimizing the impact on the economy and essential public services.

6.4.8 Hazardous Materials Release *(Medium Impact/Medium Probability)*

The release of hazardous materials into the environment can cause a multitude of problems for the population, built environment, lifeline infrastructure, environment, and the economy. Although these incidents can happen almost anywhere, certain areas of the County are at higher risk, such as near roadways that are frequently used to transport hazardous materials and locations with industrial facilities that use, store, and/or dispose of such materials. Aras crossed by railways, waterways, airways, and pipelines also have increased potential for mishaps.

Incidences can occur during production, storage, transportation, use or disposal of hazardous materials. Communities can be at risk if a chemical is used unsafely or released in harmful amounts into the environment. Hazardous materials can cause death, serious injury, long lasting health effects, and damage to buildings, the environment, homes, and other property.

The locations and identity of facilities that store hazardous materials are reported to local and federal governments. Security measures at these facilities can be heightened. Many facilities have their own hazardous materials guides and response plans, including transportation companies who transport hazardous materials.

6.4.9 Radiological Incident *(High Impact/Low Probability)*

Minor radiological accidents are possible at several facilities in Santa Barbara County that utilize some form of uranium including UCSB and area hospitals; however, a major concern for residents of Santa Barbara County is the Diablo Canyon Power Plant (DCPP). A significant radiological incident will have significant impacts on the population, built environment, lifeline infrastructure, environment, and the economy.

6.4.10 Terrorism *(Medium Impact/Medium Probability)*

In the unlikelihood of a significant terrorism event, there could be considerable impact on the population, built environment, lifeline infrastructure, environment, and the economy.

In the last fifteen years, three major incidents falling into the general category of Conventional Attacks/Active Shooter have occurred in the County. These types of events have an ability to impact the community on many levels, including ways that can undermine the quality of life within the County.

6.4.11 Cyber Threat *(Low Impact/Medium Probability)*

In the unlikelihood of a significant cyber event, there could be considerable impact on the population, built environment, lifeline infrastructure, environment, and the economy.

A cyber threat can infiltrate many institutions including banking, medical, education, government, military, and communication and infrastructure systems. The majority of effective malicious cyber-activity has become web-based. Recent trends indicate that hackers are targeting users to steal personal information and moving away from targeting computers by causing system failure. The duration of a cyber-attack is dependent on the complexity of the attack, how widespread it is, how quickly the attack is detected, and the resources available to aid in restoring the system. A cyber-attack could be geared toward one organization, one type of infrastructure and/or a specific geographical area. The affected area could range from small to large scale. Cyber-attacks generated toward large corporations can negatively affect the economy. A 2014 report from the MacAfee Corporation stated that the annual global loss to the global economy is between $375B and $500B. Attacks geared toward critical infrastructure and hospitals can result in the loss of life and the loss of basic needs, such as power and water, to the general public. Cyber-attacks can lead to the loss of operational capacity.

Most jurisdictions have several levels of security in place, dependent upon security levels of individuals and the geographical locations (onsite or remote). Redundant dispatch centers with separate systems that can function if the primary center isn’t functioning are desirable.

Humans are the weakest link in a chain of cyber security. It remains difficult to continuously monitor and manage human/operator vulnerability. However, to address this weakness it is suggested the all jurisdictions in the Santa Barbara County continue, or develop a security training program which all employees are required to complete or renew annually.

6.4.12 Aircraft Crash *(Low Impact/Medium Probability)*

In the unlikelihood of a significant aircraft crash, depending on the location, there could be considerable impact on the population and the built environment.

There are four airports in Santa Barbara County: Lompoc Airport, Santa Barbara Airport, Santa Maria Public Airport, and Santa Ynez Airport. Commercial flights are available at the Santa Barbara Airport and Santa Maria Public Airport. In addition to flights in and out of the municipal airports, commercial and private air traffic passes over the county. Military aircraft utilize Vandenberg Air Force Base. Each airport maintains emergency response plans that are tested at regular intervals with local government response agencies in accordance with FAA regulations.

A major air accident that occurs in a heavily populated residential area can result in considerable loss of life and property. Damage assessment and disaster relief efforts associated with an air accident will require support from other local governments, private organizations, and in certain instances, from the State and Federal governments.

It is anticipated that the mental health needs of survivors and surrounding residents will have to be addressed resulting from the trauma associated with the accident. A coordinated response team, comprised of mental health professionals, should take a proactive approach meeting the mental health needs from any traumatic disaster.

6.4.13 Train Accident *(Low Impact/High Probability)*

In the unlikelihood of a significant train accident there could be considerable impact on the population, economy, and the environment.

Trains running through Santa Barbara County, and in close proximity to U.S. Highway 101 in some areas, carry commuters and all other types of commodities including hazardous materials, fuel (including oil), agriculture, meats, and non-consumables. A hazardous material incident on rails or roadway has the potential to shut down both rail and highway transportation routes where the rail line and Highway101 are in close proximity.

This was the case in the 1991 Seacliff Incident, in neighboring Ventura County where a train accident released 440 gallons of aqueous hydrazine. The accident required the evacuation of the nearby Seacliff community along with the shutting down of Highway 101, and took 5 days to cleanup.

6.4.14 Natural Gas Pipeline/Storage Facility Accidents *(Medium Impact/Low Probability)*

In the unlikelihood of a significant natural gas pipeline or storage facility accident there could be considerable impact on the population, built environment, lifeline infrastructure, economy, and the environment.

Recently a large natural gas leak was discovered near the Porter Ranch area in Los Angeles County, prompting the evacuations of nearly 5,000 households that only recently were able to return to their homes.

Natural gas transported via the interstate pipelines, and some of the California-produced natural gas, is delivered into the Pacific Gas & Electric (PG&E) and Southern California Gas (SoCal Gas) intrastate natural gas transmission pipeline systems (commonly referred to as California's "backbone" natural gas pipeline system). Natural gas on the utilities' backbone pipeline systems is then delivered into the local transmission and distribution pipeline systems, or to natural gas storage fields. PG&E and SoCal Gas own and operate several natural gas storage fields that are located in Northern and Southern California.

Southern California Gas Company operates a natural gas storage field, La Goleta Storage Field, located on More Ranch Road in the Goleta area. SoCal Gas purchases market quality natural gas when prices are low and stores it in a depleted gas reservoir located at the La Goleta. The gas is withdrawn at times of high demand and sold to consumers located in 12 counties in central and southern California. SoCal Gas is currently moving forward with its plan to increase capacity of this storage field and provide additional supplies of locally produced natural gas to help meet customer demand. The project involved extracting native natural gas from previously untapped deep reservoirs by drilling two wells into known gas reserves and two exploratory wells into prospective reserves. After the native gas reserves are depleted, the reservoirs will be converted to storage use. The project does not involve hydraulic fracturing.

Generally speaking, transmission lines are large-diameter steel pipes carrying natural gas at high pressure and compressed to provide higher carrying capacity. Transmission lines are both interstate and intrastate, with the latter connecting to smaller distribution lines delivering gas directly to homes and businesses.

6.4.15 Civil Disturbance *(Medium Impact/Low Probability)*

In the unlikelihood of a civil disturbance, depending on the cause and effect, there could be considerable impact on the population, built environment, lifeline infrastructure, economy, and the environment.

While Santa Barbara County does not have a history of riots, it has had several events in Isla Vista that would qualify as a civil disturbance such as the annual Halloween Event and Flotopia which have attracted crowds of 20,000 or more and resulted in death, several injuries and widespread property damage.

6.4.16 Well Stimulation/Hydraulic Fracking *(Medium Impact/Low Probability)*

More information on the potential impacts from well stimulation/hydraulic fracking operations are being researched. There are several studies currently being conducted regarding the possible environmental impacts that could result from fracking and well stimulation, including effects on water and air quality and seismic safety (which are considered potential hazards).

6.4.17 Marine Invasive Species *(Medium Impact/Low Probability)*

The introduction of non-indigenous species (NIS) into Santa Barbara County coastal marine, estuarine and lake waters can cause significant and enduring economic, human health, and environmental impacts. Ships transfer organisms to California waters from throughout the world. The transfer of ballast water from “source” to “destination” ports results in the movement of many organisms from one region to the next.

The Santa Barbara Coast and Lake Cachuma are vulnerable to Marine Invasive Species and close monitoring of marine and lake vessels as well as water dropping (snorkeling) aircraft is needed.

Section 7 County Mitigation Strategies

7.1 Mitigation Goals and Objectives

The county-wide mitigation priorities are represented by identifying common goals and objectives. Using the 2011 HMP, the MAC reviewed and revised the goals and objectives to reflect the current county-wide capabilities, exposure to hazards, and vulnerability assessment findings. As part of the planning process, the County Planning Team reviewed and validated these goals and objectives.

Table 7.1 Goals and Objectives

Goal 1: Promote disaster resiliency for future development to help them become less vulnerable to hazards
Objective 1.A Facilitate the development (or updating) of the County's Comprehensive Plan, City General Plans, and zoning ordinances to limit (or ensure safe) development in hazard areas
Objective 1.B: Facilitate the incorporation and adoption of building codes and development regulations that encourage disaster resistant design
Objective 1.C: Facilitate consistent implementation of plans, zoning ordinances, and building and fire codes
Goal 2: Promote disaster resiliency for existing assets (critical facilities/infrastructure and public facilities) and people to help them become less vulnerable to hazards
Objective 2.A: Mitigate vulnerability of structures and public infrastructure including facilities, roadways, and utilities
Objective 2.B: Mitigate vulnerable populations
Objective 2.C: Support a coordinated permitting processes and consistent enforcement
Goal 3: Enhance hazard mitigation coordination and communication
Objective 3.A: Address data limitations identified in Hazard Profiling and Risk Assessment
Objective 3.B: Increase awareness and knowledge of hazard mitigation principles and practice among local government officials
Objective 3.C: Provide technical assistance to local governments to implement their mitigation plans

Objective 3.D: Educate the public to increase awareness of hazards, potential impact, and opportunities for mitigation actions
Objective 3.E: Monitor and publicize the effectiveness of mitigation actions implemented countywide
Objective 3.F: Educate the professional community on design and construction techniques that will minimize damage from the identified hazards
Objective 3.G: Participate in initiatives that have mutual hazard mitigation benefits for the County, cities, state, tribal, and federal governments
Objective 3.H: Encourage other organizations, within the public, private, and non-profit sectors, to incorporate hazard mitigation activities into their existing programs and plans
Objective 3.I: Continue partnerships between the state, local, and tribal governments to identify, prioritize, and implement mitigation actions
Objective 3.J: Continuously improve the County's capability and efficiency at administering pre- and post-disaster mitigation programs, including providing technical support to cities and special districts

7.2 MITIGATION ACTION/PROGRESS

The County planning team reviewed the mitigation actions identified in the 2004 and 2011 HMP to determine the status of each mitigation action. **Table 7.2** provides an overview and the status of each mitigation actions. All incomplete projects will be reassessed by the County planning team and if deemed necessary will be included in the new mitigation actions section (Section 7.4).

Table 7.2 Previous Mitigation Actions

2004 Plan Action #	Mitigation Action Description	Status	Comments
2004-9	Las Vegas and San Pedro Creeks Culvert Additions	Completed	1. The Caltrans portion, UPRR bridges, conform grading work, and floodwall work are complete. 2.The transition structure will be constructed June-August 2016.
2004-14	Santa Maria Levee Protection Project	Completed	Project started 2010 and completed in 2014

2004-22	Evaluate Enhancements to Defensible Space Program	Completed	Policy has been updated by County Fire and reflects PRC 4291.
2004-23	Continue Update to Santa Barbara County Fire Unit Fire Plan	Completed	The SBC Unit Strategic Fire Plan has been updated to 2015 and reflects Cal Fire State Template.
2004-24	Increase GIS Capabilities within Fire Department	Completed	Permanent GIS Technician hired. County Fire is also developing a GIS Intern program to add Extra Help GIS Technicians. New GIS software acquired to reflect latest technologies.
2004-1	Enhance the dissemination of risk data	In Progress	
2004-2	Obtain better data on the impacts of hazards on future development	In Progress	
2004-3	Enhance Post-Disaster Damage Inspections to Include Mitigation Strategies	In Progress	

2004-4	Seismic Rehabilitation of Existing Bridge Structures	In Progress	Caltrans has identified all bridge structures requiring upgrades - Currently the Bridges are being brought up to code by FHWA and CalTrans programs and funding.
2004-25	Tsunami Plan Consistency and Outreach	In Progress	A draft county-wide plan was drafted in 2008. Key components still working are signage placement for impacted jurisdictions and notification protocols for response agencies and the public. A Tsunami Working Group and Executive Committees continue to address planning issues and possible solutions.
2004-8	Atascadero Creek Channel Liner Improvements (Goleta)	Not started-consideration for future	
2004-11	San Ysidro Creek Realignment	Not started-consideration for future	
2004-12	Padaro Lane Ditch Improvements	Not started-consideration for future	

2004-13	Foster Road Storm Drainage Improvements	Not started- consideration for future	
2004-15	Los Alamos Storm Drainage Project	Not started- consideration for future	
2004-16	Expand Kovar Regional Basin	Not started- consideration for future	
2004-17	San Antonio Creek Improvements	Not started- consideration for future	
2004-19	Repetitive Loss Structure Voluntary Audits	Not started- consideration for future	
2004-21	Update Fire Hazard Severity Zone Mapping	Ongoing	Map adopted by State and County in 2007; and updated by the State of California with input from local jurisdictions in the future.

2004-20	Provide Incentives for RL and other flood prone property owners to retrofit homes to be safer from flooding or to construct new homes to higher standards	On-going	New and substantially improved structures in the RL area along the coast have a minimum elevation requirement regardless of FEMA's published Base Flood Elevation (BFE). This requirement helps to get discounted flood insurance rates in the unincorporated county.
2004-5	Increase Participation in Floodplain Re-mapping Initiative	On-going	Currently, the Flood Control is in a process of preparing notices to the public in regards of the new FEMA remapping along the coastal line.
2004-6	Floodplain Management and Flood Mitigation Education and Outreach	On-going	Participation in an Annual Flood Awareness week and presenting the information to the public at 2 County's locations: the Santa Barbara and the Santa Maria and advertising on the Public Works website.

2004-7	Adding Community Volunteers to Creek Walk Committees	On-going	The District engages the community on an annual basis during development of the Annual Routine Maintenance Plan. A Draft Summary is posted on the District's website, notices are sent out to interested parties, and a notice is posted in several local newspapers announcing the availability of the Draft Summary as well as the dates and times of the two public workshops individuals are welcome to attend to ask questions about the plan and/or provide comments. The public is also welcome to provide public comment when the Final Annual Routine Maintenance Plan is at our Board of Directors for approval.
2004-10	Mission Creek Channel Improvements (Santa Barbara)	On-going	Completed: 1. The box culvert from the UPRR tracks to just downstream of Yanonali St.; 2. Reach 2B-1- downstream from Montecito St. to the UPRR. 3. Reach 1B- downstream of Yanonali St. to Mason St.; 4. Reach 1A-Phase 1 - downstream from Mason St. 5. Reach 1A-Phase 2- downstream from Mason St. to State St.. The project was contracted by the City of Santa Barbara. The next portion scheduled for constructed in Summer 2016 is Reach 2A.

2004-18	Monitor RL properties for Substantial Improvement	On-going	The Flood Control District reviews all existing developments in the Special Flood Hazard Area (SFHA) and requires the applicant to determine whether or not the improvements are substantial. Developments which are substantial must be brought into compliance with the floodplain management ordinance.

2011 Plan Action #	Mitigation Action Description	Status	Comments
2011 - 1	Tecolote Tunnel rebuild	Not yet started	New in 2011
2011 - 2	Seismic Retrofit of 14 County Courthouse Facilities	Deferred from EQ-1 from 2004	Phase I and Phase II Seismic Analysis was completed. Buildings with a rating of 4 or higher were seismically retrofit for a total of 3 out of the 14 courthouse buildings. Hazard Mitigation Grant Program funding from FEMA and matching funds from the Courts were used.
2011 - 3	Inventory of Un-reinforced Masonry Structures	Deferred from EQ-6 from 2004	P&D's County Building Official is working on this project. General Services has supplied a list of County-owned unreinforced masonry structures that are in the unincorporated area of the County.
2011 - 4	Bradley Channel Improvements	Project Canceled	New in 2011

2011 - 5	‘A’ Street Basin	Project Canceled	New in 2011
2011 - 6	Unit II Ditch Improvements	Project Canceled	New in 2011
2011 - 7	Laguna County Sanitation District Earthquake Retrofit Project 1	Complete	Deferred EQ-4 from 2004
2011 - 8	Laguna County Sanitation District Earthquake Retrofit/Analysis Project 2	Project Canceled	Deferred EQ-5 from 2004
2011 - 9	Seismic Safety and Mitigation Outreach and Education	Project Canceled	Deferred EQ-7 from 2004
2011 - 10	Laguna County Sanitation District Flood Analysis and Protection	Ongoing w/ Plant Upgrade	Deferred FLD-34 from 2004
2011 - 11	Evaluate Expansion of Flood Warning System	Not yet started	Deferred FLD-40 from 2004
2011 - 12	GIS Multi-Hazard Disaster Management Information System	Not yet started	Deferred GEN-1 from 2004
2011 - 13	Old San Marcos Road Geotechnical Survey of Slope Stability	Complete	Deferred LSD/WDF-2 from 2004
2011 - 14	South County Geotechnical Survey of Slope Stability	Ongoing	Deferred LSD-3 from 2004

2011 - 15	North County Geotechnical Survey of Slope Stability	Ongoing	Deferred LSD-4 from 2004
2011 - 16	Ongoing Wildfire Education Campaign	Ongoing	New in 2011
2011-17	Staffing of Operations Division of Fire Department	Complete	Deferred WDF-6 from 2004
2011 – 18	Incorporate Dam inundation Area "Information Only" Layer in FEMA DFIRM Map Modernization Initiative	Complete	Deferred DF- 1 from 2004
2011 – 19	Construct Storm Drainage Improvements at Toro Canyon Park	Deferred	Deferred FLD-23 from 2004
2011 – 20	Tucker's Grove Park Interior Access Road Creek Crossing Improvements	Deferred	Deferred FLD-24 from 2004
2011 – 21	Cachuma Lake Mohawk Trail Bridge and Dock Abutment Rehabilitation and Access Improvements	Deferred	Deferred FLD-26 from 2004
2011 - 22	Cachuma Lake Mohawk Camping Area Bridge Abutment Protection	Deferred	Deferred FLD-27 from 2004
2011 – 23	Enhancements to Annual Culvert Inspection Program to Include Mitigation Strategies	Ongoing	Deferred FLD-31 from 2004

2011 – 24	University Circle Open Spaces Berkeley Bike/Pedestrian Bridge Removal and Replacement	Deferred	Deferred FLD-35 from 2004
2011 – 25	Jalama Beach Park Waterline Protection	Deferred	Deferred FLD-36 from 2004
2011 – 26	Live Oak Camp Access Road Protection	Deferred	Deferred FLD-37 from 2004
2011 – 27	Bridge Scour Abatement Program	Ongoing	Deferred FLD-44 from 2004
2011 – 28	Investigation of Low Capacity Bridges to Determine	Completed	Deferred FLD-45 from 2004
2011 – 29	Goleta Beach Park Embankment Protection for Park Maintenance Facilities	Deferred	Deferred LSD/CE-5 from 2004
2011 – 30	Wallace Avenue Bluff Re- Vegetation and Stabilization	Deferred	Deferred LSD/CE-7 from 2004
2011 – 31	Mountainous Road Rockfall Hazard Geotechnical Surveys	Completed	Deferred LSD/WDF-8 from 2004
2011 – 32	Parks - Guadalupe Dunes Park Entrance Road	Deferred	New in 2011

2011 – 33	Santa Barbara Bowl - Service Road Improvements (N. End Drive- Service Road off of Newton Rd) Entrance	Project Canceled	New in 2011
2011 – 34	Toro Canyon Park Gazebo Access Road Drainage	Deferred	Deferred FLD-39 from 2004
2011 – 35	Obtain National Weather Service "Storm Ready" Designation	Completed	Deferred FLD-42 from 2004
2011 – 36	Jalama Road Geotechnical Survey of Slope Stability	Completed	Deferred LSD/WDF-9 from 2004
2011 – 37	Relocate the Hearts Adaptive Riding Center	In-Progress	New in 2011
2011 – 38	Geotechnical Engineered Solution of Slope Failure on Glen Annie Road (South County)	Completed	Deferred LSD-1 from 2004
2011 – 39	Cachuma Lake Recreational Area Public Access Ramp Protection	Deferred	Deferred FLD-29 from 2004
2011 – 40	Cachuma Lake Water Treatment Plant Relocation	Deferred	Deferred FLD-28 from 2004
2011 – 41	Develop a Debris Management Plan for Public Works Infrastructure generated debris	Not Started (see new language in 4.2.1.7)	Deferred GEN-4 from 2004

2011 – 42	Goleta Beach Park Pier Abutment Protection	Deferred	Deferred LSD/CE-6 from 2004
2011 – 43	Enhance Fire Weather Forecasting and Predictive Services Program	Ongoing	Deferred WDF-2 from 2004
2011 – 44	Firewise Community Planning and Prevention Techniques Training	Not yet Started	Deferred WDF-7 from 2004

7.3 PRIORITIZING MITIGATION ACTION

The County planning team used the STAPLE/E Criteria (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) to evaluate and prioritize the mitigation actions. Based on the evaluation score of each of STAPLE/E Criteria (**Table 7.3**), mitigation actions received a cumulative score. The cumulative score was then used to prioritize the mitigation actions. The following scale was used to evaluate each STAPLE/E Criteria:

0= Poor (negative impacts)

1= Fair (neutral or no impacts)

2= Good (positive impacts)

The intent of prioritizing mitigation actions is to help the County focus and concentrate their efforts; however, it should be noted that when and if specialized grants and/or funds are made available that could finance a mitigation action the County may adjust the ranking to enable them to implement the mitigation action.

Table 7.3 STAPLE/E Criteria

SOCIAL	• Is the proposed action socially acceptable to the community? • Are there equity issues involved that would mean that one segment of the community are treated unfairly? • Will the action cause social disruption?
TECHNICAL	• Will the proposed action work? • Will it create more problems than it solves? • Does it solve a problem or only a symptom? • Is it the most useful action in light of other community goals?
ADMINISTRATIVE	• Can the community implement the action? • Is there someone to coordinate and lead the effort? • Is there sufficient funding, staff, and technical support available? • Are there ongoing administrative requirements that need to be met?
POLITICAL	• Is the action politically acceptable? • Is there public support both to implement and to maintain the project?
LEGAL	• Is the community authorized to implement the proposed action? Is there a clear legal basis or precedent for this activity? • Are there legal side effects? Could the activity be construed as a taking? • Is the proposed action allowed by the general plan, or must the general plan be amended to allow the proposed action? • Will the community be liable for action or lack of action? • Will the activity be challenged?
ECONOMIC	• What are the costs and benefits of this action? • Do the benefits exceed the costs? • Are initial, maintenance, and administrative costs taken into account? • Has funding been secured for the proposed action? If not, what are the potential sources (public, non-profit, and private)? • How will this action affect the fiscal capability of the community? • What burden will this action place on the tax base or local economy? • What are the budget and revenue effects of this activity? • Does the action contribute to other community goals, such as capital improvements or economic development? • What benefits will the action provide?
ENVIRONMENTAL	• How will the action affect the environment? • Will the action need environmental regulatory approvals? • Will it meet local and state regulatory requirements? • Are endangered or threatened species likely to be affected?

7.4 MITIGATION ACTION

The following table (**Table 7.4**) presents the prioritized list of mitigation actions which will be considered and implemented during the life of this plan update.

Table 7.4 Prioritized and Recommended Mitigation Actions

Project Number	Project Title	STAPLE/E Rating
2016-31	Critical Infrastructure Threat Assessment ID Project	20
2016-6	Fire ECC Facility	20
2016-34	Assess and Mitigate Structure Ignition Vulnerabilities	19
2016-12	Montecito Creek Channel Improvements, Montecito	19
2016-32	Establish Drought Task Force	19
2016-7	South Coast Foothill Fuel Break	18
2016-13	North Ave Storm Drain Improvements, East Side Lompoc	18
2016-1	Establish Climate Change Task Force	18
2016-4	Ongoing Wildfire Education Campaign	18
2016-5	Enhance Fire Weather Forecasting Program	18
2016-33	Retrofit Water Supply System	17
2016-28	Airport Ditch Lining, Orcutt	17
2016-21	Maria Ygnacio East Debris Basin Modification, Goleta	16
2016-22	Maria Ygnacio Main Debris Basin Modification, Goleta	16
2016-23	San Ysidro Debris Basin Modification, Montecito area	16
2016-24	Cold Springs Debris Basin Modification, Montecito area	16
2016-25	Rattlesnake Debris Basin Modification, Upper Santa Barbara	16
2016-27	Unit II Channel Improvements, Santa Maria	16
2016-30	Implementation of County Energy and Climate Action Plan	16
2016-26	Faraday Storm Drain, Santa Ynez	14
2016-9	Romero Creek Capacity Improvements, Montecito	13
2016-10	Oak Creek Capacity Improvements, Montecito	13
2016-11	San Ysidro Creek Capacity Improvements, Montecito	13
2016-14	Cebada Canyon Channel Improvements, Lompoc Valley	12
2016-15	Sycamore Canyon Master Drainage Plan, Santa Barbara	12
2016-16	Mission Canyon Master Drainage Plan, Santa Barbara	12
2016-17	San Pedro Creek Fish Passage, Goleta	12
2016-2	Guadalupe Levee Project	12
2016-3	HWY 166 Drainage Project	12
2016-19	Bradley Channel Relining, Santa Maria	10
2016-20	Bradley Channel Improvements, Santa Maria	10
2016-29	Stockpile Area-South Coast	7

7.5 IMPLEMENTATION PLAN

Number#	**STAPLE/E Rating:**
2016-1	18

Action Title
Establish Climate Change Task Force

Action Description
Establish and maintain a multi-jurisdictional Climate Change Task Force to: 1) Assess vulnerability to climate change 2) Monitor climate change conditions 3)Forecast short term and long term impacts 4) Develop related mitigation projects and programs

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
x	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
	3C
x	3D
	3E
	3F
x	3G
	3H
x	3I
x	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
x	Coastal Storm Surge
x	Climate-Related
x	Sea Level Rise/Coastal Flooding and Erosion
x	Droughts and Water Shortage

		Severe Weather and Storms	
		Extreme Heat	
		Freeze	
		Hailstorm	
		Tornado	
		Hurricane	
		Windstorm	
		Energy Shortage and Energy Resilience	
		Oil Spill	
		Dam Failure	
	x	Agricultural Pests and Disease	
		Epidemic/Pandemic/Vector Borne Disease	
		Hazardous Material Release	
		Radiological Incident	
		Terrorism	
		Cyber Threat	
		Aircraft Crash	
		Train Accident; Explosion and/or Chemical Release	
		Natural Gas Pipeline/Storage Facility Accidents	
		Levee Failure	
		Tsunami	
		Civil Disturbance	
		Well Stimulation/Hydraulic Fracking	
		Marine Invasive Species	
Estimated timeline to complete 2018			
Cost/Funding Source Unknown/ Acquire HMA Grant, PDM Grant			
Responsible Agency/Department Planning and Development			
Comments			

Number# 2016-2	**STAPLE/E Rating:** 12

Action Title
Guadalupe Levee Project

Action Description
Study the feasibility and the benefits of building a Levee system adjacent to the city of Guadalupe to prevent chronic flooding.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
X	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze

		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete 2026
Cost/Funding Source 100 million/ Acquire HMA Grant, PDM Grant
Responsible Agency/Department County Flood Control/Army Core of Engineers
Comments

Number#	**STAPLE/E Rating:**
2016-3	12

Action Title
HWY 166 Drainage Project

Action Description
Improve drainage along both side s of Hwy 166 in the city of Guadalupe to mitigate chronic flooding of roadway.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
x	2A
x	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
	3C
	3D
	3E
	3F
x	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze

		Hailstorm	
		Tornado	
		Hurricane	
		Windstorm	
		Energy Shortage and Energy Resilience	
		Oil Spill	
		Dam Failure	
		Agricultural Pests and Disease	
		Epidemic/Pandemic/Vector Borne Disease	
		Hazardous Material Release	
		Radiological Incident	
		Terrorism	
		Cyber Threat	
		Aircraft Crash	
		Train Accident; Explosion and/or Chemical Release	
		Natural Gas Pipeline/Storage Facility Accidents	
		Levee Failure	
		Tsunami	
		Civil Disturbance	
		Well Stimulation/Hydraulic Fracking	
		Marine Invasive Species	
Estimated timeline to complete 2021			
Cost/Funding Source 5 million/ Acquire HMA Grant, PDM Grant			
Responsible Agency/Department CALTRANS			
Comments			

Number# 2016-4	**STAPLE/E Rating:** 18
Action Title Ongoing Wildfire Education Campaign	
Action Description The "Ready! Set! Go!" Campaign was launched in May of 2009. This campaign is a new approach to educating Southern California residents about the year-round threat of wildfire. This public education program seeks to gain active public involvement in reducing life and property loss caused by wildfires. The program was developed by agencies in California Regional Mutual Aid Regions 1 and 6 to convey a unified message. The program is designed to be used by any agency and can be modified to meet a specific jurisdiction's needs.	

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing assets and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard mitigation coordination and communication
	3A
	3B
	3C
x	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
x	Wildfire
	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion

	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze
	Hailstorm
	Tornado
	Hurricane
	Windstorm
	Energy Shortage and Energy Resilience
	Oil Spill
	Dam Failure
	Agricultural Pests and Disease
	Epidemic/Pandemic/Vector Borne Disease
	Hazardous Material Release
	Radiological Incident
	Terrorism
	Cyber Threat
	Aircraft Crash
	Train Accident; Explosion and/or Chemical Release
	Natural Gas Pipeline/Storage Facility Accidents
	Levee Failure
	Tsunami
	Civil Disturbance
	Well Stimulation/Hydraulic Fracking
	Marine Invasive Species

Estimated timeline for completion
Ongoing. Continually update education materials and provide educational programs to the public on an annual basis.

Estimated Cost/Funding Source
$20,000 annually/ Acquire Fire Safe Council Grant

Responsible Agency/Department
County Fire Department, Public Information Officer

Comments
Best way to prepare the public for emergencies is to provide education. This program covers everything from preparing your home to the actual evacuation.

Number# 2016-5	**STAPLE/E Rating:** 18

Action Title
Enhance Fire Weather Forecasting Program

Action Description
The current fire weather program is based on the U.S. Forest Service system, which includes only 4 remote automated weather stations throughout the county. The stations are in areas that are not representative of the micro-climates that exist within the county. A larger and better network would allow the county to focus fire prevention efforts from year to year in the most accurate and threatened locations.

- Acquire 7 permanent and 4 portable automated fire weather stations. SBC Fire purchased and installed 3 permanent RAWS in 2014/2015. They are located at San Marcos Pass, Refugio Pass, and Tepusquet. Four additional units are proposed for Carpinteria Foothills, Gaviota, Santa Ynez Valley, and Cuyama. County Fire has two portable RAWS that need to be replaced due to age and legacy technology.
- Site the stations at optimum locations throughout the County, with the flexibility of moving the portables on an annual basis.

Cost is anticipated to be approximately $110,000 for 4 new permanent stations and two portables, and a budget of approximately $4,000 per year for maintenance will be needed. With more accurate forecasting, limited resources could be applied to more targeted locations for prevention and operational activities resulting in significant cost savings and likely losses avoided due to prevention activities.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing assets and people to reduce/eliminate vulnerability to hazards
	2A
	2B
x	2C
	Enhance hazard mitigation coordination and communication
	3A
	3B
	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
X	Wildfire
	Flood
	Coastal Storm Surge
X	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
X	Severe Weather and Storms
	Extreme Heat
	Freeze
	Hailstorm
	Tornado
	Hurricane
	Windstorm
	Energy Shortage and Energy Resilience
	Oil Spill
	Dam Failure
	Agricultural Pests and Disease
	Epidemic/Pandemic/Vector Borne Disease
	Hazardous Material Release
	Radiological Incident
	Terrorism
	Cyber Threat
	Aircraft Crash
	Train Accident; Explosion and/or Chemical Release
	Natural Gas Pipeline/Storage Facility Accidents
	Levee Failure
	Tsunami
	Civil Disturbance
	Well Stimulation/Hydraulic Fracking
	Marine Invasive Species

Estimated timeline for completion
2018

Estimated Cost/Funding Source
$114,000/ Acquire Fire Safe Council Grant, PDM Grant, Fire Act Grant

Responsible Agency/Department
County Fire, Prevention Section

Comments
RAWS units/ Fire Weather Program will allow the implementation of a Fire Danger Operating Plan to provide daily Burning Index values and Fire Danger adjective ratings for use in fire business decision support.

Number# 2016-6	**STAPLE/E Rating:** 20

Action Title
Fire Emergency Communications Center (ECC) Facility

Action Description
Build second Fire ECC in Battalion 2. This would provide redundancy in the event that the existing South Coast combined Sherriff/Fire ECC is compromised by a natural disaster.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing assets and people to reduce/eliminate vulnerability to hazards
x	2A
	2B
	2C
	Enhance hazard mitigation coordination and communication
	3A
	3B
	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

x	Earthquake
	Liquefaction
x	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
x	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
x	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze

		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
	x	Oil Spill
	x	Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
	x	Hazardous Material Release
	x	Radiological Incident
		Terrorism
		Cyber Threat
	x	Aircraft Crash
	x	Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
	x	Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline for completion
2021

Estimated Cost/Funding Source
$5,000,000/ Acquire Homeland Security Grant, PSWIN Grant

Responsible Agency/Department
County Fire/Sheriff

Comments
The existing South Coast ECC is located in a High Fire Hazard area and was evacuated during the 1990 Paint Fire. Adding a dedicated Fire ECC in the north or central county would allow redundancy in the event of a disaster that compromised one facility. Personnel could be crossed trained to handle both Fire and Law duties as needed.

Number# 2016-7	**STAPLE/E Rating:** 18
Action Title South Coast Foothill Fuel Break	
Action Description Plan and implement the completion of a community defensible space fuel break along the foothills of the Santa Ynez Mountains from the Ventura County line to Telecote Canyon west of Goleta City.	

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing assets and people to reduce/eliminate vulnerability to hazards
x	2A
x	2B
	2C
	Enhance hazard mitigation coordination and communication
	3A
	3B
	3C
	3D
	3E
	3F
x	3G
	3H
x	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
X	Wildfire
	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms

		Extreme Heat
		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline for completion
2021

Estimated Cost/Funding Source
$800,000/ Acquire Fire Safe Council Grant, SRA Grant

Responsible Agency/Department
County Fire

Comments
This project would involve planning, designing, and creating a fuel break along the foothills of the Santa Barbara South Coast. Cost would include CEQA documentation, GIS work, and implementation using hand crews.

Number# 2016-8	**STAPLE/E Rating:** 17

Action Title
East Side Storm Drain Outlet reconstruction, Santa Barbara City

Action Description
Reconstruction of the existing box culvert at the Ocean, installation of a new Tidal Gate.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
x	2D
x	2E
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete TBD
Cost/Funding Source $342,000/Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number# 2016-9	**STAPLE/E Rating:** 13

Action Title
Romero Creek Capacity Improvements, Montecito

Action Description
Improve the capacity of the existing facilities. The project consists of widening the channel from 30 feet and 18 feet currently, to 74 feet.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
x	2D
x	2E
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms

		Extreme Heat	
		Freeze	
		Hailstorm	
		Tornado	
		Hurricane	
		Windstorm	
		Energy Shortage and Energy Resilience	
		Oil Spill	
		Dam Failure	
		Agricultural Pests and Disease	
		Epidemic/Pandemic/Vector Borne Disease	
		Hazardous Material Release	
		Radiological Incident	
		Terrorism	
		Cyber Threat	
		Aircraft Crash	
		Train Accident; Explosion and/or Chemical Release	
		Natural Gas Pipeline/Storage Facility Accidents	
		Levee Failure	
		Tsunami	
		Civil Disturbance	
		Well Stimulation/Hydraulic Fracking	
		Marine Invasive Species	
Estimated timeline to complete TBD			
Cost/Funding Source $25,197,000/ Acquire HMA Grant, PDM Grant			
Responsible Agency/Department Santa Barbara County Public Works, Flood Control			
Comments			

Number# 2016-10	**STAPLE/E Rating:** 13

Action Title

Oak Creek Capacity Improvements, Montecito

Action Description

Improve the capacity of the existing facilities. This project will replace 14 foot wide concrete-lined channel from the Ocean to the UPRR; acquisition of two parcels. This would also necessitate the replacement of a private bridge.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
x	2D
x	2E
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage

		Severe Weather and Storms
		Extreme Heat
		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete TBD
Cost/Funding Source $24,144,000/ Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Work, Flood Control
Comments

Number# 2016-11	**STAPLE/E Rating:** 13

Action Title
San Ysidro Creek Capacity Improvements, Montecito

Action Description
Improve the capacity of the existing facilities. That will include construction of a 70-foot wide channel in the lower section and 48-foot wide channel in the upper section of the creek; acquisition of one lot and easements on the other lots.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
x	2D
x	2E
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage

		Severe Weather and Storms
		Extreme Heat
		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species
Estimated timeline to complete TBD		
Cost/Funding Source $36,985,000/ Acquire HMA Grant, PDM Grant		
Responsible Agency/Department Santa Barbara County Public Works, Flood Control		
Comments		

Number#	**STAPLE/E Rating:**
2016-12	19

Action Title
Montecito Creek Channel Improvement, Montecito

Action Description
The Project is located along Montecito Creek from the Montecito Basin to the Casa Dorinda and will widen the existing channel in order to improve conveyance capacity.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
x	2C
x	2D
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete TBD
Cost/Funding Source $8,350,000/ Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number# 2016-13	**STAPLE/E Rating:** 18
Action Title North Avenue Storm Drain Improvements, East Side, Lompoc	
Action Description This Project is the future second phase and will construct 30” and 24” storm drain with 4 catch basins; replace the concrete sidewalk, curb and gutter. The project is located at the intersection of “H” street and North Ave.	

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
x	2D
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms

		Extreme Heat
		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete 2019 (three years)
Cost/Funding Source $582,000/ Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number# 2016-14	**STAPLE/E Rating:** 12
Action Title Cebada Canyon Channel Improvements, Lompoc Valley	
Action Description This Project is located in the vicinity of MCLaughlin Rd. The project will reconstruct a portion of the existing concrete lined rectangular channel.	

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
x	2C
x	2D
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete TBD
Cost/Funding Source $250,000/ Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Work, Flood Control
Comments

Number# 2016-15	**STAPLE/E Rating:** 12

Action Title
Sycamore Canyon Master Drainage Plan, Santa Barbara

Action Description
This project is located along Sycamore Creek from the Pacific Ocean to the Five Points roundabout. The Master Drainage Plan will identify a Project that will widen the channel in order to improve conveyance capacity.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
x	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species
Estimated timeline to complete TBD		
Cost/Funding Source $6,875,000 to design/construct/ Acquire HMA Grant, PDM Grant		
Responsible Agency/Department Santa Barbara County Public Works, Flood Control		
Comments		

Number# 2016-16	**STAPLE/E Rating:** 12

Action Title
Mission Canyon Master Drainage Plan, Santa Barbara

Action Description
This project will develop a Master Drainage Plan for the Mission Canyon area.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
x	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze
	Hailstorm

		Tornado	
		Hurricane	
		Windstorm	
		Energy Shortage and Energy Resilience	
		Oil Spill	
		Dam Failure	
		Agricultural Pests and Disease	
		Epidemic/Pandemic/Vector Borne Disease	
		Hazardous Material Release	
		Radiological Incident	
		Terrorism	
		Cyber Threat	
		Aircraft Crash	
		Train Accident; Explosion and/or Chemical Release	
		Natural Gas Pipeline/Storage Facility Accidents	
		Levee Failure	
		Tsunami	
		Civil Disturbance	
		Well Stimulation/Hydraulic Fracking	
		Marine Invasive Species	
Estimated timeline to complete 2018 (two years)			
Cost/Funding Source $150,000/ Acquire HMA Grant, PDM Grant			
Responsible Agency/Department Santa Barbara County Public Works, Flood Control			
Comments			

Number# 2016-17	**STAPLE/E Rating:** 12

Action Title
San Pedro Creek Fish Passage, Goleta

Action Description
This project will modify the existing concrete lined channel in order to accommodate fish passage in the Reach between Avenida Gorrion and Calle Real.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze

		Hailstorm	
		Tornado	
		Hurricane	
		Windstorm	
		Energy Shortage and Energy Resilience	
		Oil Spill	
		Dam Failure	
		Agricultural Pests and Disease	
		Epidemic/Pandemic/Vector Borne Disease	
		Hazardous Material Release	
		Radiological Incident	
		Terrorism	
		Cyber Threat	
		Aircraft Crash	
		Train Accident; Explosion and/or Chemical Release	
		Natural Gas Pipeline/Storage Facility Accidents	
		Levee Failure	
		Tsunami	
		Civil Disturbance	
		Well Stimulation/Hydraulic Fracking	
		Marine Invasive Species	
Estimated timeline to complete TBD			
Cost/Funding Source $4,907,000/ Acquire HMA Grant or PDM Grant			
Responsible Agency/Department Santa Barbara County Public Work, Flood Control			
Comments			

Number# 2016-18	**STAPLE/E Rating:** 10
Action Title Blosser Basin, Santa Maria	
Action Description This project consists of either constructing a pipeline or installing a pipe to drain the runoff from the basin.	

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
x	2C
x	2D
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms

		Extreme Heat	
		Freeze	
		Hailstorm	
		Tornado	
		Hurricane	
		Windstorm	
		Energy Shortage and Energy Resilience	
		Oil Spill	
		Dam Failure	
		Agricultural Pests and Disease	
		Epidemic/Pandemic/Vector Borne Disease	
		Hazardous Material Release	
		Radiological Incident	
		Terrorism	
		Cyber Threat	
		Aircraft Crash	
		Train Accident; Explosion and/or Chemical Release	
		Natural Gas Pipeline/Storage Facility Accidents	
		Levee Failure	
		Tsunami	
		Civil Disturbance	
		Well Stimulation/Hydraulic Fracking	
		Marine Invasive Species	
Estimated timeline to complete TBD			
Cost/Funding Source TBD/Acquire HMA Grant, PDM Grant			
Responsible Agency/Department Santa Barbara County Public Works, Flood Control			
Comments			

Number# 2016-19	**STAPLE/E Rating:** 10
Action Title Bradley Channel Relining, Santa Maria	
Action Description This project will reconstruct the existing concrete lined channel between Jones St., and Main St. which will reduce the risk of future structural failure.	

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
x	2C
x	2D
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete TBD
Cost/Funding Source $2,037,000/HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number# 2016-20	**STAPLE/E Rating:** 10

Action Title
Bradley Channel Improvements, Santa Maria

Action Description
This project consist of improving two sections of the existing channel: between HWY 101 and Route 135 and Between East Donovan Rd. and Magellan Dr. Completion of this project will minimize the flood hazard to adjacent properties.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
x	2C
x	2D
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms

	Extreme Heat	
	Freeze	
	Hailstorm	
	Tornado	
	Hurricane	
	Windstorm	
	Energy Shortage and Energy Resilience	
	Oil Spill	
	Dam Failure	
	Agricultural Pests and Disease	
	Epidemic/Pandemic/Vector Borne Disease	
	Hazardous Material Release	
	Radiological Incident	
	Terrorism	
	Cyber Threat	
	Aircraft Crash	
	Train Accident; Explosion and/or Chemical Release	
	Natural Gas Pipeline/Storage Facility Accidents	
	Levee Failure	
	Tsunami	
	Civil Disturbance	
	Well Stimulation/Hydraulic Fracking	
	Marine Invasive Species	

Estimated timeline to complete TBD
Cost/Funding Source $2,032,000/ Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number# 2016-21	**STAPLE/E Rating:** 16

Action Title
Maria Ygnacio East Debris Basin Modification, upper area of Goleta

Action Description
This project will modify the existing basin: will include removal of two berms currently blocking the old creek, re-grading of creek banks, native plants restoration.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze

		Hailstorm	
		Tornado	
		Hurricane	
		Windstorm	
		Energy Shortage and Energy Resilience	
		Oil Spill	
		Dam Failure	
		Agricultural Pests and Disease	
		Epidemic/Pandemic/Vector Borne Disease	
		Hazardous Material Release	
		Radiological Incident	
		Terrorism	
		Cyber Threat	
		Aircraft Crash	
		Train Accident; Explosion and/or Chemical Release	
		Natural Gas Pipeline/Storage Facility Accidents	
		Levee Failure	
		Tsunami	
		Civil Disturbance	
		Well Stimulation/Hydraulic Fracking	
		Marine Invasive Species	

Estimated timeline to complete 2018
Cost/Funding Source $593,000/Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number# 2016-22	**STAPLE/E Rating:** 16

Action Title
Maria Ygnacio Main Debris Basin Modification, upper area of Goleta

Action Description
This project will remove the existing debris basin dam embankment, to restore the fish passage. Also will include grading and native plants restoration.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze

		Hailstorm	
		Tornado	
		Hurricane	
		Windstorm	
		Energy Shortage and Energy Resilience	
		Oil Spill	
		Dam Failure	
		Agricultural Pests and Disease	
		Epidemic/Pandemic/Vector Borne Disease	
		Hazardous Material Release	
		Radiological Incident	
		Terrorism	
		Cyber Threat	
		Aircraft Crash	
		Train Accident; Explosion and/or Chemical Release	
		Natural Gas Pipeline/Storage Facility Accidents	
		Levee Failure	
		Tsunami	
		Civil Disturbance	
		Well Stimulation/Hydraulic Fracking	
		Marine Invasive Species	
Estimated timeline to complete 2018 (two years)			
Cost/Funding Source $885,000/Acquire HMA Grant, PDM Grant			
Responsible Agency/Department Santa Barbara County Public Works, Flood Control			
Comments			

Number#	**STAPLE/E Rating:**
2016-23	16

Action Title
San Ysidro Debris Basin Modification, Montecito area

Action Description
This project will remove or modify the existing basin, in order to improve the fish passage; will include grading and native plants restoration.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze

		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete 2021
Cost/Funding Source $1,490,000/Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number# 2016-24	**STAPLE/E Rating:** 16
Action Title Cold Springs Debris Basin Modification, Montecito area	
Action Description This project will either modify or remove the existing basin, in order to improve the fish passage; will include grading and native plants restoration.	

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze

		Hailstorm	
		Tornado	
		Hurricane	
		Windstorm	
		Energy Shortage and Energy Resilience	
		Oil Spill	
		Dam Failure	
		Agricultural Pests and Disease	
		Epidemic/Pandemic/Vector Borne Disease	
		Hazardous Material Release	
		Radiological Incident	
		Terrorism	
		Cyber Threat	
		Aircraft Crash	
		Train Accident; Explosion and/or Chemical Release	
		Natural Gas Pipeline/Storage Facility Accidents	
		Levee Failure	
		Tsunami	
		Civil Disturbance	
		Well Stimulation/Hydraulic Fracking	
		Marine Invasive Species	
Estimated timeline to complete 2021			
Cost/Funding Source $2,299,000/Acquire HMA Grant, PDM Grant			
Responsible Agency/Department Santa Barbara County Public Works, Flood Control			
Comments			

Number# 2016-25	**STAPLE/E Rating:** 16
Action Title Rattlesnake Debris Basin Modification, upper area of Santa Barbara	
Action Description This project will either remove or modify the existing basin, on order to improve the fish passage; will include grading and native plants restoration.	

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat
	Freeze

	Hailstorm
	Tornado
	Hurricane
	Windstorm
	Energy Shortage and Energy Resilience
	Oil Spill
	Dam Failure
	Agricultural Pests and Disease
	Epidemic/Pandemic/Vector Borne Disease
	Hazardous Material Release
	Radiological Incident
	Terrorism
	Cyber Threat
	Aircraft Crash
	Train Accident; Explosion and/or Chemical Release
	Natural Gas Pipeline/Storage Facility Accidents
	Levee Failure
	Tsunami
	Civil Disturbance
	Well Stimulation/Hydraulic Fracking
	Marine Invasive Species

Estimated timeline to complete 2018
Cost/Funding Source $196,000/Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number#	**STAPLE/E Rating:**
2016-26	14

Action Title

Faraday Storm Drain, Santa Ynez

Action Description

This project consists of acquiring easements and constructing ~1920 feet of storm drain, west of Faraday St., between Olive St. and Pine St. in Santa Ynez. This future project will reduce the flooding during rain events.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
x	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete 2019
Cost/Funding Source $1,570,000/Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number# 2016-27	**STAPLE/E Rating:** 16

Action Title
Unit II Channel Improvements, Santa Maria

Action Description
This project is intended to increase the hydraulic capacity of the existing channel by realigning and removing a sharp S-curve, widening of approximately 5,000 linear feet of channel. The project will require real property acquisition. The improvements will provide additional flood protection to the adjacent farm land.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
x	2C
x	2D
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage

		Severe Weather and Storms
		Extreme Heat
		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete 2018
Cost/Funding Source $3,602,000/Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number# 2016-28	**STAPLE/E Rating:** 17

Action Title
Airport Ditch Lining, Orcutt

Action Description
This project will replace a portion of the existing earthen-lined ditch with concrete lining or combination of storm drain/open channel. The project is located along Skyway Drive, in Santa Maria. The project will reduce erosion and deposition in downstream reaches that subsequently require cleaning.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
x	2C
x	2D
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage

		Severe Weather and Storms
		Extreme Heat
		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete 2018
Cost/Funding Source $1,135,000/ Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number#	**STAPLE/E Rating:**
2016-29	7

Action Title
Stockpile Area – South Coast

Action Description
This project consists of obtaining land on the South Coast for use as a stockpile by Flood Control Maintenance. This area will be used to temporarily stockpile materials cleared out of channels and basins during yearly or emergency maintenance. The materials will then be disposed of by contractors when they need fill material for construction projects.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
x	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete TBD
Cost/Funding Source $1,929,000/Acquire HMA Grant, PDM Grant
Responsible Agency/Department Santa Barbara County Public Works, Flood Control
Comments

Number# 2016-30	**STAPLE/E Rating:** 16

Action Title
Implementation of County Energy and Climate Action Plan (ECAP)

Action Description
Implement County Energy and Climate Action Plan by: 1) Conducting annual monitoring and reporting of progress toward ECAP goals; 2) Updating baseline data for emissions, etc.; 3) Continuing to develop partnerships with community groups that support ECAP implementation

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
x	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
	3C
x	3D
	3E
	3F
x	3G
	3H
x	3I
x	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
x	Flood
x	Coastal Storm Surge
x	Climate-Related
x	Sea Level Rise/Coastal Flooding and Erosion
x	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Hurricane
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
	x	Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete Ongoing
Cost/Funding Source Unknown/ County General Fund (salaries) Acquire HMA Grant, PDM Grant
Responsible Agency/Department Planning and Development
Comments

Number#	**STAPLEE#**
2016-31	20

Action Title

Critical Infrastructure Threat Assessment Identification Project

Action Description

Currently there is not a countywide agreed upon list of Critical or Essential Facilities. While there are several lists of Critical and Essential Facilities, the criteria are not standardized. Additionally, the list of Critical and Essential Facilities lack the necessary meta data (i.e., construction type, elevation level, replacement value, content cost) that would be beneficial to assessing risk to threats and hazards.

Because there is not a comprehensive list of Critical or Essential Facilities, the HMP utilized the Hazus default data. While the Hazus default data provided better insight into the earthquake and flood risk, the assumptions (i.e. structural characteristics of building) does not adequately reflect the true vulnerabilities of the facilities and/or the community. To remedy this, Santa Barbara County is proposing to create a comprehensive Critical or Essential Facilities List and utilize it in Hazus and upload the information into the secure IP Gateway portal.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
x	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
	3C
	3D
	3E
	3F
	3G
	3H
	3I
	3J

Applicable Hazards

x	Earthquake
x	Liquefaction
x	Landslides and Other Earth Movements
x	Expansive Soils/Land Subsidence
x	Wildfire

	x	Flood
	x	Coastal Storm Surge
	x	Climate-Related
	x	Sea Level Rise/Coastal Flooding and Erosion
	x	Droughts and Water Shortage
	x	Severe Weather and Storms
	x	Extreme Heat
	x	Freeze
	x	Hailstorm
	x	Tornado
	x	Windstorm
	x	Energy Shortage and Energy Resilience
	x	Oil Spill
	x	Dam Failure
	x	Agricultural Pests and Disease
	x	Epidemic/Pandemic/Vector Borne Disease
	x	Hazardous Material Release
	x	Radiological Incident
	x	Terrorism
	x	Cyber Threat
	x	Aircraft Crash
	x	Train Accident; Explosion and/or Chemical Release
	x	Natural Gas Pipeline/Storage Facility Accidents
	x	Levee Failure
	x	Tsunami
	x	Civil Disturbance
	x	Well Stimulation/Hydraulic Fracking
	x	Marine Invasive Species

Estimated timeline to complete 2018
Cost/Funding Source $100,000/Acquire HMA Grant, PDM Grant
Responsible Agency/Department County Office of Emergency Management
Comments

Number#	**STAPLE/E Rating:**
2016-32	19

Action Title

Establish Drought Task Force

Action Description

Establish and maintain a multi-jurisdictional Drought Task Force to: 1) Assess vulnerability to drought risk; 2) Monitor drought conditions; 3)monitor water supply; 4) Plan for drought; 5) Develop related mitigation projects and programs

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
x	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
	3C
x	3D
	3E
	3F
x	3G
	3H
x	3I
x	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
x	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
	x	Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete 2017
Cost/Funding Source Unknown/ Ongoing Salaries, General Fund, Special District Budgets, Acquire HMA Grant, PDM Grant
Responsible Agency/Department Chief Executive Office
Comments Once Task Force is established, this will remain an on-going mitigation action.

Number# 2016-33	**STAPLE/E Rating:** 17

Action Title:
Retrofit Water Supply Systems

Action Description
Improve water supply and delivery systems to save water through actions as: 1) Design water delivery systems to accommodate drought events; 2) Develop new or upgrade existing water delivery system into and out of Lake Cachuma.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
x	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
	3A
	3B
	3C
	3D
	3E
	3F
x	3G
	3H
x	3I
x	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
	Wildfire
	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
x	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
	x	Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete 2021
Cost/Funding Source 100 million/ Acquire HMA Grant, PDM Grant
Responsible Agency/Department Drought Task Force / Public Works
Comments Collaboration with State Water Resources

Number# 2016-34	**STAPLE/E Rating:** 19

Action Title:
Assess and mitigate structure ignition vulnerabilities

Action Description
Identify the most vulnerable homes and communities, based on structure characteristics that make them vulnerable to ignition during wildfires. Educate the public about the need to assess and mitigate their own vulnerabilities to home loss, including the potential for grant funding to carry out mitigation activities.

Relevant Objective

	Promote disaster resiliency for future development to reduce/eliminate vulnerability to hazards
	1A
	1B
	1C
	Promote disaster resiliency for existing development and people to reduce/eliminate vulnerability to hazards
x	2A
	2B
	2C
	Enhance hazard Mitigation coordination and communication
x	3A
	3B
	3C
x	3D
	3E
	3F
	3G
x	3H
	3I
	3J

Applicable Hazards

	Earthquake
	Liquefaction
	Landslides and Other Earth Movements
	Expansive Soils/Land Subsidence
x	Wildfire
	Flood
	Coastal Storm Surge
	Climate-Related
	Sea Level Rise/Coastal Flooding and Erosion
	Droughts and Water Shortage
	Severe Weather and Storms
	Extreme Heat

		Freeze
		Hailstorm
		Tornado
		Windstorm
		Energy Shortage and Energy Resilience
		Oil Spill
		Dam Failure
		Agricultural Pests and Disease
		Epidemic/Pandemic/Vector Borne Disease
		Hazardous Material Release
		Radiological Incident
		Terrorism
		Cyber Threat
		Aircraft Crash
		Train Accident; Explosion and/or Chemical Release
		Natural Gas Pipeline/Storage Facility Accidents
		Levee Failure
		Tsunami
		Civil Disturbance
		Well Stimulation/Hydraulic Fracking
		Marine Invasive Species

Estimated timeline to complete
Ongoing. Continually assess structure vulnerabilities to ignition and seek support for retrofits to existing housing stock.

Cost/Funding Source
TBD/ Acquire grant via Fire Safe Council, CalFire, and/or FEMA

Responsible Agency/Department
County Fire Department

Comments
Very few resources exist to assess and mitigate structure vulnerabilities to ignition during wildfires, so this effort is critical to lowering home losses.

SECTION 8 PLAN MAINTENANCE

The County and its Departments have been continually implementing mitigation actions and monitoring their effectiveness since the last HMP update in 2011. Many deferred projects from 2004 were completed successfully, while others are on-going or newly in-progress. This section sets forth the intended process for monitoring and maintaining the 2016 Plan update.

After FEMA approval and Board adoption, the 2011 HMP was integrated into the Safety Element of the Santa Barbara County Comprehensive Plan by Board Resolution. County planning efforts and Capital Projects directed by the county were influenced by the information taken from the 2011 HMP. The 2011 HMP was also utilized and referenced to update the 2013 County Emergency Operations Plan, the County Comprehensive (General) Plan, and the recent 2016 THIRA.

The County of Santa Barbara Office of Emergency Management (OEM) will be responsible for ensuring that this plan is being monitored. County OEM will call the Mitigation Advisory Committee (MAC) and the County Planning Team to meet on an annual basis to review the mitigation actions set forth in this plan and to discuss progress. During these meetings, the MAC will develop a list of items to be updated, added, or removed in future revisions of this plan.

Major disasters affecting the County, any legal changes, and/or other events may trigger a meeting of the MAC or The Santa Barbara County Planning Team, at which point they will be responsible for determining if the plan needs be updated before the five year mark.

Department heads and other emergency preparedness staff who serve in the County's Emergency Operations Center (EOC) will focus on evaluating the HMP in light of technological, budgetary, political changes, or other significant events that may occur during the year.

In addition to holding at least one annual meeting, the MAC and County Planning Team will meet to update the HMP every five years. To ensure that this update occurs in a timely fashion, after completion of the third year following plan adoption, the MAC and County Planning Team will undertake or attempt to hire a consultant to support the following activities:

- Thoroughly analyze and update the risk of natural and human-caused hazards in the Planning Area.
- Complete a new Annual Review Questionnaire and review previous survey
- Provide a detailed review and revision of the mitigation strategy.
- Prepare a new mitigation action plan.
- Prepare an updated draft HMP and submit it to Cal OES and FEMA for preliminary review.
- Submit the updated draft HMP to the Board of Supervisors for adoption.
- Submit the updated HMP to FEMA for final approval.

Upon adoption, the 2016 HMP will be again be integrated into the Safety Element of the Santa Barbara County Comprehensive Plan by Board Resolution. This ensures that future county planning efforts and Capital Projects directed by the county are influenced by the updated Plan. The 2016 HMP will also be utilized and referenced to update the County's Emergency Operations Plan, when it is updated in 2018. The MAC and Local Planning Teams will also bring their experience from the HMP process to influence city and county wide planning efforts.

The public will continue to be involved whenever the plan is updated and as appropriate during the monitoring and evaluation process. Prior to adoption of updates, the County will provide multiple opportunities for the public to comment on the revisions. A public notice will be published prior to the meetings to announce the comment period and meeting locations.

8.1 Point of Contact

Comments or suggestions regarding this plan may be submitted at any time to Robert Lewin, Director, Office of Emergency Management, using the following information:

Robert Lewin, Director
Office of Emergency Management
4408 Cathedral Oaks Road
Santa Barbara, CA 93110
rlewin@sbcoem.org
805-681-5526

BOARD OF DIRECTORS
AGENDA LETTER

Secretary of the Board of Directors
4699 Hollister Avenue,
Goleta, CA 93110
(805) 879-4621

Department Name:	Office of the General Manager
For Agenda Of:	December 10, 2019
Estimated Time	10 min
Continued Item:	No
If Yes, Date From:	NA

TO: Board of Directors

FROM: Department: Office of the General Manager
Contact Info: David Matson, Assistant General Manager

SUBJECT: **Multi-Jurisdictional Local Hazard Mitigation Plan Amendment**

Legal Concurrence:
As to form: Yes

Recommended Action:

Adopt Resolution 2019-___, a Resolution Approving and Adopting the Goleta Water District's Multi-Jurisdictional Local Hazard Mitigation Plan Amendment (Attachment 1).

Summary Text:

Due to the significant number of federally declared disasters in recent years, the California Governor's Office of Emergency Services (CalOES) in coordination with the Federal Emergency Management Agency's (FEMA) has been actively promoting the Hazard Mitigation Grant Program (HMGP). With additional recent federal declarations, California expects several hundred million dollars in grant monies to become available over the next year. The funding match for these grants is 25%.

While the District has submitted to this grant program previously, in 2018 FEMA issued a new determination that because special districts have their own elected governing boards, special districts must submit their own annex to be eligible for grant funds. Previously, the District was covered under the Multi-Jurisdictional Local Hazard Mitigation Plan prepared by Santa Barbara County and local cities, which is available at: http://www.countyofsb.org/ceo/asset.c/3416. In order to satisfy this requirement in a timely manner, CalOES and FEMA are offering special districts the opportunity to be annexed into the existing multi-jurisdictional plan, and will provide for an expedited review. Additionally, the required sections have been scaled back to the minimum necessary for acceptance.

A workshop to review the process, and provide direction to interested entities was held by CalOES and FEMA. The District attended the workshop, and the draft Amendment to the County's Multi-Jurisdictional Local Hazard Mitigation Plan (Attachment 2) is compliant with the checklist and materials provided.

The draft Amendment is limited to natural disasters, including drought and water shortage, wildfire, earthquake, flood, and tsunami. These hazards, as well as specific projects that could mitigate future losses, are identified and documented in the Amendment. While the District can propose additional future projects as the need arises, including these projects in the Amendment is helpful for the grant process. The Amendment is intended to provide additional insight into the vulnerabilities of the District, particularly as relates to providing water service during emergencies.

Following approval and adoption by the Board of Directors, the expected timeframe for review by from CalOES and FEMA is three to six months. Upon approval by CalOES and FEMA, the Amendment will be inserted into the Santa Barbara County Multi-Jurisdictional Local Hazard Mitigation Plan as an annex.

Background:

The Water Management and Long Range Planning Committee considered the item at its November 21, 2019 meeting and forwarded to the Board of Directors with a recommendation of approval.

Anytime a Presidential Disaster Declaration is declared, FEMA's Hazard Mitigation Grant Program funds are made available in California to fund plans and projects that reduce the effects of future natural disasters. In California, funds are administered by the CalOES Hazard Mitigation Grant Program Unit. Eligible applicants include state agencies, local governments, special districts, and some private non-profits. Several hundred million dollars in funding are anticipated to be available over the next year. An approved Local Hazard Mitigation Plan is required at the time of grant award.

Fiscal Analysis:

N.A.

Attachments:

Attachment 1 – Resolution of the Goleta Water District Board of Directors Approving and Adopting the Goleta Water District's Multi-Jurisdictional Local Hazard Mitigation Plan Amendment
Attachment 2 - Multi-Jurisdiction Local Hazard Mitigation Plan Amendment

Authored by:

KK Holland, Principal Policy Analyst
Kelly Bourque, Engineering Assistant

Attachment 1

Resolution No. 2019 –_____

A RESOLUTION OF THE GOLETA WATER DISTRICT BOARD OF DIRECTORS APPROVING AND ADOPTING THE GOLETA WATER DISTRICT'S MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN AMENDMENT

RESOLUTION NO. 2019-
Introduced by the Water Management and Long Range Planning Committee

A RESOLUTION OF THE GOLETA WATER DISTRICT BOARD OF DIRECTORS APPROVING AND ADOPTING THE GOLETA WATER DISTRICT'S MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN AMENDMENT AS AN ANNEX TO THE SANTA BARBARA COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, the Goleta Water District ("District") is a County water district organized and existing under the laws of the State of California;

WHEREAS, the Federal Disaster Mitigation Act of 2000 ("Act"), as described in 44 CFR Section 201.6 mandates local governments to submit and maintain a Federal Emergency Management Agency ("FEMA") approved local hazard mitigation plan; and

WHEREAS, identifications of hazards within the District's service territory assists with response planning, exercise development, public education and awareness, and other emergency management functions; and

WHEREAS, the Santa Barbara County Office of Emergency Services Multi-Jurisdictional Hazard Mitigation Plan ("County Plan") identifies local risk assessment and mitigation strategies to reduce the impacts of natural, technological, or intentional disasters on the public and local government; and

WHEREAS, the District's Amendment to the County Plan will be adopted as an annex to the currently operative County Plan; and

WHEREAS, FEMA has approved the County Plan, into which the District's Amendment will be incorporated as an annex; and

WHEREAS, the "Act" requires the District's Amendment to the County Plan to be formally adopted by District Board of Directors.

NOW THEREFORE BE IT FOUND, DETERMINED AND RESOLVED by the Board of Directors of the Goleta Water District as follows:

1. The Goleta Water District adopts by reference the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan.

2. The Goleta Water District Board of Directors approves and adopts the Goleta Water District Multi-Jurisdictional Local Hazard Mitigation Plan

Amendment as an Annex to the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan.

3. The Board of Directors hereby finds that the foregoing is true and correct.

4. This resolution shall take effect immediately.

PASSED AND ADOPTED by the Board of Directors of the Goleta Water District this 10th day of December by the following roll call vote:

AYE:
NAY
ABSENT
ABSTAIN

ATTEST:

JOHN D. MCINNES	LAUREN HANSON, PRESIDENT
DISTRICT SECRETARY	BOARD OF DIRECTORS

Attachment 2

Multi-Jurisdiction Local Hazard Mitigation Plan Amendment

Goleta Water District

Local Hazard Mitigation Plan

Annex to 2017 Santa Barbara County
Multi-Jurisdictional Natural Hazard Mitigation Plan

Index of Requirements

Goleta Water District Introduction and Planning Process
(Element A1.b & A1.c)

Goleta Water District (District) was established on November 17, 1944. The service territory extends along the south coast of Santa Barbara County west from the Santa Barbara city limits to El Capitan. The District is bounded on the south by the Pacific Ocean and on the north by the foothills of the Santa Ynez Mountains, spanning approximately 29,000 acres. The District provides water to a population of approximately 87,000, including residential, commercial, agricultural, industrial, and institutional customers by drawing on a diverse water supply portfolio that includes local surface water supplies, groundwater, state water and recycled water. The water system includes over 270 miles of pipelines, a water treatment plant, storage reservoirs, pumping facilities, nine wells, a recycled water system, and connections with Lake Cachuma and the State Water Project.

The District operates under the general direction of an elected five-member Board of Directors (Board). The terms of office are four years, with elections held every two years and terms staggered to ensure continuity. The Board holds public meetings on the second Tuesday of every month, and three additional public committees meet monthly. The Board employs a General Manager to manage approximately 65 staff members, who carry out a variety of District functions. These include water treatment and distribution, meter installation and repair, water quality testing, infrastructure development and maintenance, customer support, accounting, conservation activities, and applications for new water service.

The District *Annex* to the *2017 Multi-Jurisdictional Natural Hazard Mitigation Plan* was prepared and formulated with input and coordination from the District at the invitation of Santa Barbara County, with support from the State of California Governor's Office of Emergency Services (CalOES) and the Federal Emergency Management Agency (FEMA) (**Element A1b**). The document was prepared by District staff members, including Principal Policy Analyst KK Holland, Chief Engineer Daniel Brooks, and Engineering Assistant Kelly Bourque, under the direction of Assistant General Manager David Matson (**Element A1c**). The plan guides the District toward greater disaster preparedness and resilience, with the goal of maintaining essential lifeline water service to customers in the event of a natural disaster, while minimizing water service interruptions.

Hazard Identification (Element B1.a, B3.b, & C1.a)

The District has identified the following natural hazards as affecting the District's service territory. A general description and identification of the hazard's vulnerability to the District, and current and proposed mitigation actions are discussed in each hazard section below:

1. Drought and Water Shortage (High Probability/High Impact)
2. Wildfire (High Probability/High Impact)
3. Earthquake (Medium Probability/High Impact)
4. Flood (High Probability/Medium Impact)
5. Tsunami (Low Probability/Medium Impact)

Drought & Water Shortage (High Probability/High Impact)

Description of Hazard (Element B1.a)

A drought is defined as a period of below-average precipitation in a given region, resulting in prolonged shortages in the water supply. A drought is a gradual phenomenon and is generally not signified by one or two dry years, but a prolonged period of abnormally low rainfall leading to a water shortage. Under the District's Board-adopted Drought Preparedness and Water Shortage Emergency Plan, a local water shortage emergency is triggered when the water supply is projected to be 85-90% of normal for the next 12 months, or is insufficient to provide 80% of normal deliveries for the next 24 months. In any given year, the District can be subject to drought conditions and water shortages. A drought can last for months or years; the most recent drought beginning in 2012 reached a record eighth year before ending in 2019.

Due to the unique geographical terrain and climate, cyclic drought is common in the region. The climate in the District service area is generally characterized as Mediterranean coastal with mild, dry summers and cool winters. High temperatures average about 70 degrees while low temperatures rarely fall below 40 degrees. The area is semi-arid with average rainfall of approximately 18 inches per year, primarily occurring between November and March. Historic rainfall has fluctuated significantly, with just under 6 inches recorded in 1990 and more than 40 inches in 1983.

Droughts in Santa Barbara County do not always coincide with federal and state declarations. For example, in 2018 Santa Barbara County and the District remained in a water shortage emergency despite the statewide drought emergency declaration having been lifted on April 7, 2017. The District has the authority to issue local declarations, including water use restrictions defined in the District's Code and Drought Preparedness and Water Shortage Emergency Plan.

<u>Location and Extent of Hazard in Goleta Water District Service Territory</u>

The District is subject to periodic drought conditions and water shortages. This is largely due to the heavy reliance on local surface water supplies, with Lake Cachuma traditionally serving as the primary source of water for the south coast of Santa Barbara County. Lake Cachuma receives the bulk of its water supply through precipitation run-off from the Santa Ynez River during winter months, with limited access to state water resources. Due to the Mediterranean climate and depending on the weather, stream flows throughout the Santa Ynez watershed are highly variable and directly affected by rainfall. A minimum of 15 inches of cumulative rainfall from winter storms is typically needed in the Santa Ynez River watershed for inflow to occur, as anything less than that is likely to infiltrate into the ground. Thus, the location and timing of storms are important factors that can affect lake levels.

Most streams in the District's jurisdiction are dry during the summer months since flows rise and fall in response to precipitation. The drainages in the southern part of the District's jurisdiction are characterized by high intensity, short duration runoff events, due to the relatively short distance from the top of the Santa Ynez Mountains to the Pacific Ocean. Watercourses can experience a high amount of sedimentation during wet years and high amounts of vegetative growth during dry and moderate years.

Further increasing the District's vulnerability to drought is that groundwater, the other major local source of potable water, is also adversely affected by dry weather. The majority of basin recharge occurs from winter storm flows, which are adversely affected by drought, and use of groundwater typically increases during periods of low rainfall. While the Goleta Groundwater Basin (Basin) is adjudicated under the Wright Judgement, and the District historically operated an Aquifer Storage and Recovery Program that involved injecting drinking water into the ground when excess surface water was available, the Basin and the stored drought buffer provides nearly half of the District's water supply during severe drought conditions. Injection can accelerate the decades-long rate of recharge to restore the Basin, and the District is working with the State to receive updated permit approval for drinking water injection into groundwater based on updated state regulations, but recovery still takes years.

<u>Extent of Hazard in Goleta Water District Service Territory</u>
Since 1950, Santa Barbara County has had four (4) state and or federally declared drought disasters; in 1990, 1991, and 2001, and the most recent drought from 2012-2019. The District finally suspended its Stage I Water Shortage in August of 2019.

Droughts in the 1970s and 1980s drove the development of significant conservation programs by the District, adjudication of the basin, an Aquifer Storage Recovery Program, as well as several voter initiatives to protect local groundwater resources in the Goleta Valley. The Wright Judgement, which adjudicated the Basin, allows the District to extract 2,350 acre feet per year (AFY). This excludes water the District has stored in the basin, as well as the drought buffer available to the District when the Basin when there are reduced deliveries of Cachuma water. The voter-approved SAFE Ordinance prohibits the District from allocating water to new or additional potable water service connections to properties not previously served by the District, unless the District: receives 100 percent of its annual Cachuma Project allocation; the District has met all of its Wright Judgment obligations; there is no water rationing; and, the District has met its obligation to make its annual storage contribution to the drought buffer. The 1985 to 1992 drought also resulted in the District developing recycled water as an alternative water supply source, with recycled water coming online in 1996.

The most recent drought (2012 to 2019) surpassed the 1985-1992 drought in both severity and length. On September 9, 2014 the District declared a Stage II Water Shortage, with a targeted 25% reduction and mandatory water use restrictions. As drought conditions worsened, the District declared a Stage III Water Shortage on May 12, 2015, raising the targeted reduction to 35% and further restricting outdoor irrigation. From 2012 to 2019, rainfall in the Goleta area was as low as 7 inches in a single year, and Lake Cachuma fell to 7% of capacity. Despite above average rainfall of 25 inches in 2017, the South Coast remained in drought conditions even as the statewide drought was declared over. The region has experienced drought conditions for 7 of the past 10 years, or more than half of the past two decades.

Climate change has the potential to increase the frequency, severity, and duration of droughts. Extreme heat and reduced rainfall create conditions more conducive to the evaporation of moisture from the ground, and reduced or earlier melting of winter snow packs can affect the amount of water the District receives from the State Water Project. Extreme heat and less rainfall reduce regional stream flows and introduce drier conditions. The result of these processes is an increased potential for more frequent and more severe periods of drought.

Vulnerability to Hazard (Element B3.b)

The District provides essential lifeline water service to 87,000 people. Droughts significantly reduce water levels across all seasons, disrupting the average amounts of water available to customers. Water is essential for drinking, sanitation, and cooking. The inability to serve customers, either temporarily or for prolonged periods, puts the health and safety needs of the community at risk. Critical activities like fire suppression, and facilities serving the health and safety needs of the community such as hospitals and health facilities, schools, day cares and the Santa Barbara County Jail, all depend on sufficient water being available.

Water is also critical to the economic health of the community, and shortages or rationing can produce significant economic challenges. The region depends heavily on agriculture, tourism, and technology, all of which are adversely affected by drought. Agricultural impacts can extend for years as losses associated with perennial agriculture, such as orchards, sometimes require a minimum of five years to recover production. Water is also heavily relied upon in the commercial sector for tourism, technology, manufacturing, research at the University of California Santa Barbara, as well as meeting the minimum health and safety needs for employees and tourists.

Given the vulnerability of the Goleta Valley to drought, the District has invested heavily in water supply development and infrastructure to create a diverse water supply portfolio from four distinct water sources – Lake Cachuma, the Basin, recycled water, and imported water from the State Water Project. The amount of water the community uses can vary annually due to exchange agreements, availability of other supplies and customer demand, but over the last ten years surface water availability has typically ranged as high as 14,000 AFY and as low as 10,000 AFY. Public health and safety, which represents the minimum amount needed to meet indoor water use needs and provide water for essential services (e.g., fire suppression and hospitals, but excluding outdoor irrigation and agriculture) is approximately 6,000 AFY. The vulnerability of each of these water supply sources to drought are articulated below.

Drought and Surface Water

The availability of surface water from Lake Cachuma varies from year to year as a result of weather and runoff. Under normal conditions, 75% of the normal planned annual demand (up to 9,322 AFY) can be met with supplies from Lake Cachuma, which is the District's largest and lowest cost source of water. To illustrate the extent to which the semi-arid climate can give rise to drought, consider that Lake Cachuma last spilled in 2011. Within three years, dry conditions reduced the lake to 30% of capacity and resulted in local water shortage declarations. During periods of severe drought, such as Water Years (WY) 2015-16, and 2016-17, the District received a zero-percent allocation from Lake Cachuma, meaning no additional water was available from the lake.

Drought and Imported Water Deliveries

In addition to Lake Cachuma's role as a primary water supply source, the lake serves as a water storage and conveyance system. State Water Project (SWP) water and all supplemental water purchases are delivered to and stored in the lake via a pipeline connected to the San Luis Reservoir in Merced County. The District's entitlement is 7,000 AFY, of which a maximum of 4,500 AFY can be delivered due to capacity constraints of the incoming SWP pipeline and the need to share and coordinate deliveries with other South Coast water agencies. In a normal year, the District plans for the delivery of 3,800 AF of SWP water, which is approximately 23% of the District's water supply portfolio. Carryover water from previous years is also stored in Lake Cachuma when the District's annual allocation is not fully used.

Water delivered from Lake Cachuma to the South Coast depends on a gravity-fed intake tower that delivers water to the Tecolote Tunnel, a six mile long tunnel conveying water from Lake Cachuma to the District's water treatment plant and the City of Santa Barbara, which serves treated water to other agencies such as Montecito Water District and Carpinteria Valley Water District. The gravity fed system that serves the Tecolote Tunnel cannot operate if lake elevations drop below the level of the lowest gate at the intake structure. When this occurs, water is stranded in the lake unless a pumping barge is placed into service to pump water up to the lowest gate of the intake tower. Prolonged drought conditions not only reduce available water supplies, but can also strand SWP and purchased water by shutting down the conveyance system at the lake.

Drought and Groundwater

The District uses nine groundwater wells to access the Goleta Groundwater Basin, to which it has an adjudicated right to pump up to 2,350 AFY. During emergencies and periods of extended drought, the groundwater basin serves as the lifeline for the Goleta Valley as it provides an alternative water supply capable of meeting the minimum public health and safety needs of the community. The District leaves water in the Basin during wet years to store for future use as a critical drought buffer.

It typically takes a number of years for the Basin to return to normal levels after drought periods. Recharge occurs naturally through rain and runoff that percolates into the soil, and water from rivers and streams that infiltrate below ground. The District has also historically injected water into the Basin under its Aquifer Storage and Recovery Program when surplus water was available. During droughts, reduced winter storms and a lack of surplus water combine to reduce groundwater recharge at a time of increased extraction. While the Basin is adjudicated, limiting its use when possible is part of the District's overall basin management strategy.
Across the state, the overdrafting of groundwater basins have led to the loss of permanent storage, land subsidence, or sea water intrusion.

Drought and Water Quality
Besides water shortages, droughts also creates water quality problems. This is emerging as a severe issue as record low water levels at Lake Cachuma increased lake temperatures, and receding lake levels allowed vegetation to grow in the dry lake bed. During the winter, vegetation is submerged and increased loads of vegetation accumulate in the lake as a result of winter runoff. Vegetation and debris decompose in the lake and thus increase the concentration of organic material in the water. During certain months of the year, lake water organic levels exceed the treatment capacity of the District's water treatment plant, and alternative water supplies, such as groundwater, must be used to meet state and federal drinking water regulations.

The increase of organic material requires additional filtration and disinfection by the District. Increased use of chlorine for disinfection leads to the creation of undesirable and regulated disinfection byproducts (DBPs). Reduced rainfall and lower lake levels also lead to a higher evaporation-to-condensation ratio, which can increase salt and metal concentrations, and water temperatures. These conditions have the potential to cause algae blooms that increase organic matter and further degrade water quality. This further accelerates the creation of DBPs and water treatment challenges.

Water quality can further exacerbate water shortages during a drought because State water and supplemental water purchases are delivered through Lake Cachuma, and thus present the same challenging water quality conditions and treatment issues as local surface water supplies. These issues are not unique to the current drought but have been exacerbated by the increasing duration and severity of drought, and are likely to occur with increasing frequency due to climate change. Water quality challenges are further compounded by wildfires, which occur with increased frequency during droughts.

Current Mitigation Strategies (Element C1.a)

While it is not possible to eliminate the threat of drought, the District engages in a number of proactive mitigation strategies. These include:

- Maintaining a diverse water supply portfolio with surface water, groundwater, State Water, and recycled water.
- Careful management of the Basin, which includes drawing on other supply sources to leave groundwater in the basin to preserve a drought buffer for use during critical dry periods.
- Investing in the well and distribution infrastructure necessary to access stored groundwater.
- The purchase of supplemental water when necessary to augment local supplies.
- Adoption of a Drought Preparedness and Water Shortage Contingency Plan with water use restrictions.
- Use of an advanced forecasting model to manage water supply and customer demand.
- A robust conservation program, including rebates to help customers save water, and educational outreach on waterwise practices. This has led to District residential customers achieving among the lowest per-capita water use in the State. Combined indoor and outdoor residential water use during the drought consistently outperformed the State's target of 55 gallons per person per day for indoor use.
- The provision of recycled water, considered a drought-proof water supply, for non-potable uses, such as landscape irrigation and restroom facilities.
- Use of a temporary drought surcharge to purchase supplemental water, rehabilitate wells, and distribution system infrastructure to access groundwater supplies and recover increased costs associated with maintaining water service during the drought.
- Use of a tiered rate structure for residential users.

Improvements to Current and New Mitigation Strategies (Element C1.b and C4.b)

Additional mitigation strategies are needed to further mitigate drought impacts and protect against new vulnerabilities that are not adequately covered by existing efforts. Mitigation actions for Drought and Water Shortage are listed below:

1. Increased Access to Emergency Water Supplies

The District maintains three interconnections with the neighboring City of Santa Barbara water supply. Together, the current capacity of the interconnections is limited to a maximum flow of 2 million gallons per day, less than the District's estimated public health and safety (indoor) water demand should the District be limited in an emergency. The City of Santa Barbara's Lauro Reservoir contains enough storage capacity for several days under normal conditions, and thus may provide backup water to the District in an emergency. Installing or upsizing the District's current interconnections will increase the District's flexibility and reliability for water during a water shortage or in the event of an emergency.

2. Additional Water Quality Treatment

Additional treatment will be necessary to treat changing water quality conditions associated with increased temperatures at the lake during droughts, the breakdown of submerged vegetation at overgrown areas of the lake bed, and the increase of organic matter in the water. Physical controls can be implemented at the lake (vegetation management plan, screens or filters on the intake gates, mixers, aerators), at the water treatment plant (ozonation, chemical treatment, Powder Activated Charcoal or Granular Activated Carbon), at District reservoirs (aeration or air stripping technology), or at various points throughout the distribution system. Water quality mitigation is critical as State Water Project and supplemental water purchases are delivered through the lake and present the same challenging water quality conditions and treatment issues as local surface water supplies. The only other alternative water supply unaffected by water quality issues during drought is groundwater, which is under high demand during dry periods.

3. Booster Pump Station Upgrades

During water shortages when limited surface water is available from Lake Cachuma, the District relies on groundwater to serve District customers. Delivering groundwater requires the District use pump stations to lift groundwater from wells located at lower elevations to customers located in higher elevations along the foothills of the Santa Ynez Mountains. The District's pump stations are also vital for meeting necessary pressures for fire-fighting at higher elevations. However, the District's booster pump stations were designed for emergency use only and not for continual use as needed during prolonged water shortages. The District's pump stations require upgrades to increase capacity and redundancy for sustainable, long-term use to move water to various pressure zones at adequate pressures. This project also allows access to back-up water supplies in the event of an emergency interruption to surface water deliveries or a shutdown of the District's water treatment plant. Designs have been prepared for the District's Edison Booster Pump Station and Garrett Van Horne Booster Pump Station. These are two larger capacity pump stations that are heavily relied upon during groundwater operations and are most in need of increased capacity and upgrades to operate on a long-term basis and in emergencies.

Wildfire (High Probability/High Impact)

Description of Hazard (Element B1.a)

Wildfires can be classified as either a wildland fire or a wildland-urban interface (WUI) fire. Wildland fires occur in an area relatively undeveloped except for the possible existence of basic infrastructure, such as roads and power lines. A WUI fire includes situations where a wildfire enters a developed area with structures and other human developments. In WUI fires, the fire is fueled by both naturally occurring vegetation and the urban structural elements. According to the National Fire Plan issued by the U.S. Departments of Agriculture and Interior, the wildland-urban interface is defined as “the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.”

The WUI fire can be subdivided into three categories: (1) the classic wildland-urban interface where well-defined urban and suburban development presses up against open expanses of wildland areas; (2) the mixed wildland-urban interface with isolated homes, subdivisions, and small communities situated predominantly in wildland settings; and (3) the occluded wildland-urban interface where islands of wildland vegetation occur inside a largely urbanized area.

Generally, many of the areas at risk within the District fall into the classic wildland-urban interface category. Certain conditions must be present for a wildfire hazard to occur: a large source of fuel must be present, the weather must be conducive (generally hot, dry, and windy), and fire suppression sources must not be able to easily suppress and control the fire.

The majority of wildfires are human-induced or caused by lightning. Once burning, wildfire behavior is based on several factors: fuel, topography, and weather. Fuel will affect the potential size and behavior of a wildfire depending on the amount present, its burning qualities (e.g. level of moisture), and its horizontal and vertical continuity. Topography affects the movement of air and fire over the ground surface. The terrain can also change the speed at which the fire travels, and the ability of firefighters to reach and extinguish the fire. Weather as manifested in temperature, humidity and wind (both short and long-term) affect the probability, severity, and duration of wildfires. The majority of the most destructive fires locally are wind driven and influenced by Santa Ana events. Santa Ana winds are strong, extremely dry down-slope winds that originate inland and affect coastal Southern California. These hot, dry weather patterns are typically observed in the fall, but can also occur throughout the year. Santa Ana winds often bring the lowest relative humidity of the year to coastal Southern California. Low humidity, combined with the warm, compressional-heated air mass, and high wind speeds create critical fire weather conditions.

Fire threat is a combination of two factors: (1) fire frequency or the likelihood of a given area burning, and (2) potential fire behavior. These two factors are combined to create four threat classes ranging from moderate to extreme. Vegetation and topography were the significant elements in the identification of the fire threat zones. A substantial amount of the vegetation in Santa Barbara County is commonly chaparral, a dense and scrubby vegetation that has evolved to persist in a fire-prone habitat. Chamise, manzanita, and ceanothus are all examples of chaparral plants common in the Santa Barbara County.

Climate change can increase wildfire hazards. Hotter temperatures dry out vegetation and increase fire risk. Extreme weather patterns that alternate between wet and dry can create more fuel, and more frequent, prolonged drought conditions can hinder the ability of firefighters to contain fires. Droughts especially create conditions that are very susceptible to wildfires because there is low humidity and vegetation is dry and brittle due to the lack of rainfall.

Large wildfires also have several indirect effects beyond those of a smaller, local fire. These may include impacts to air and water quality, health issues, erosion, road closures, business closures, and other forms of losses. Furthermore, large wildfires increase the threat of other disasters, such as landslide and flooding.

Vulnerability to Hazard (Element B3.b)

Santa Barbara County was subject to 29 major wildfires over 88 years, resulting in a 33% chance of occurrence in any given year. Twenty-one (21) of those fires occurred over the past 25 years alone. Wildfires have become more frequent, with 14 major wildfires, burning a range of 21 to 282,000 acres since 2000. Of these fires, two (Sherpa and Gap) burned in the District service territory, and five (Zaca, White, Rey, Whittier, and Thomas) burned within the Lake Cachuma watershed. In July 2018, the Holiday Hill fire burned 28 structures within a neighborhood of the District's service area, threatening nearby District infrastructure and damaging a reservoir. Approximately 70% of the watersheds in Lake Cachuma have burned since 2007 (Figure 1).

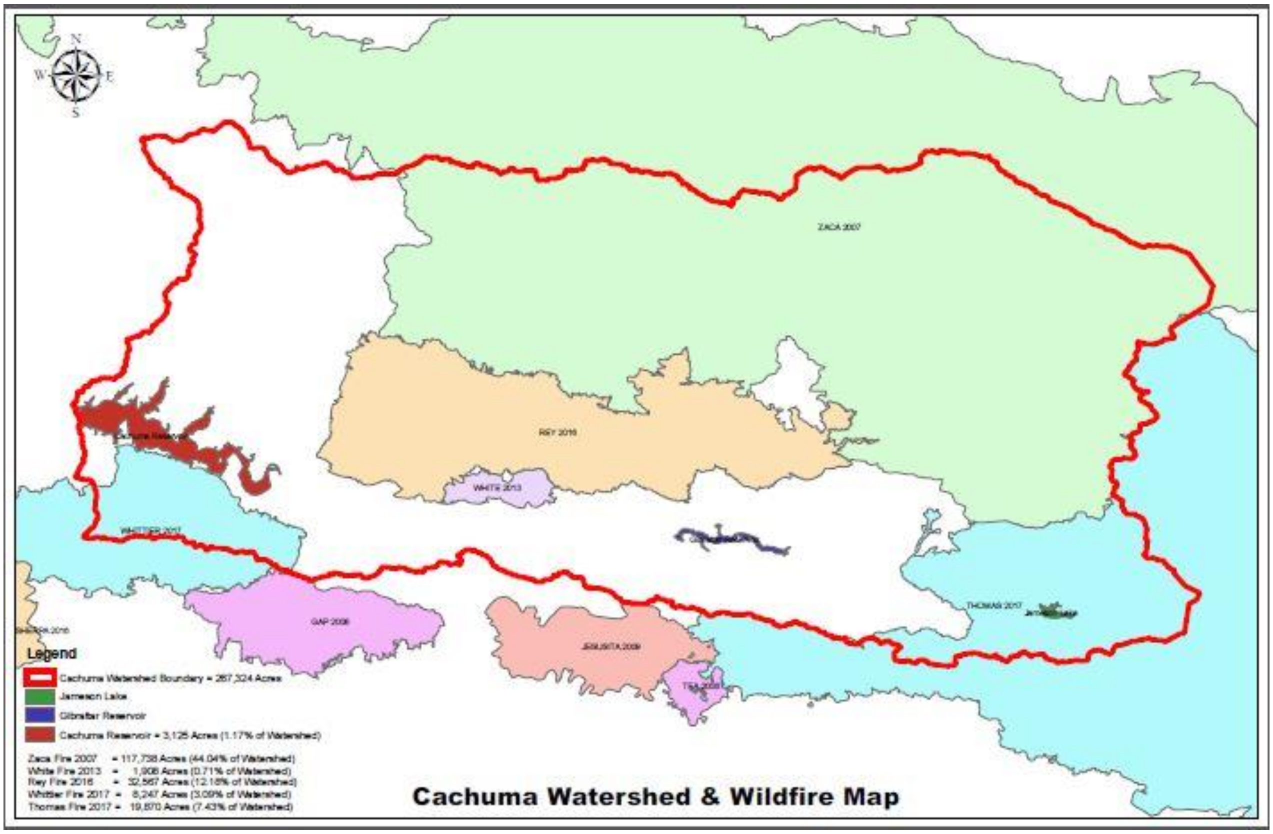


Figure 1. The Thomas, Zaca, Gap, and Whittier Wildfires which burned in close proximity to the Cachuma Watershed.

In 2017, the Whittier fire occurred next to the Cachuma Reservoir, burning a total of 18,430 acres. The Whittier fire burned close to the intake tower leaving critical facilities at risk of flood and erosion as well as water quality. In 2017, the Thomas Fire burned in Santa Barbara County including portions of the District territory and in the Santa Ynez River watershed. The Thomas Fire was one of the most destructive wildfires in history, and one of the largest in California burning approximately 281,893 acres of land, and sending ash into the lake through the air and subsequent winter storms. Sedimentation associated with ash and soil erosion in the watershed significantly worsened water quality.

Threat to District Infrastructure

Wildfires threaten District infrastructure, particularly facilities located in the WUI. In the past few years, fires have burned up to the conveyance facilities used to deliver water from Lake Cachuma to the District's Corona Del Mar Water Treatment Plant (CDMWTP), and various District storage reservoirs. Previous wildfires have also threatened the distribution system and other critical assets, such as pumps, motors, treatment chemical feeds, and analyzers. In July 2018, the Holiday Hill Fire burned and melted water treatment aeration equipment at the District's one million gallon Fairview Reservoir. While the District has been fortunate that no critical facilities have been lost, the potential consequences would be devastating. Vital facilities threatened by wildfires are detailed here.

Lake Cachuma Intake Tower
Burning of the intake tower at Lake Cachuma would result in loss of water conveyance to 250,000 people on the South Coast, and prevent the District from taking deliveries of surface water, State Water, and supplemental water purchases. Such a loss would cause the District to rely solely on groundwater, which is a limited resource and requires energy for pumping that may also be interrupted by red flag warnings.

District Corona Del Mar Water Treatment Plant
Located in the WUI, the CDMWTP has been threatened by fires in the past. Brush clearance and proactive staging of engines during fire incidents have been critical to structure protection. The loss of CDMWTP would leave the District entirely dependent on groundwater, which can only meet the minimum public health and safety needs of the community on a limited basis if all wells are online. As mentioned above, groundwater wells also require energy which may be limited during a wildfire as electricity grids may be shut down. Further, fuel deliveries for back-up generators may be limited if highways are shut down due to proximity to fires and evacuation areas.

District Reservoirs
A number of the District's reservoirs and storage tanks are located in the WUI. The District's reservoirs are located at higher elevations in the District's system within chaparral brush areas more vulnerable to fires. The District has limited storage capacity, and the loss of a reservoir impacts the ability to balance the system and hold water for emergency use in the event Lake Cachuma deliveries are interrupted.

Distribution System
Fires that burn through parts of the distribution system can disrupt the District's ability to deliver water to customers by disconnecting parts of the system. Fires can melt above ground infrastructure, water meters, and can consequently introduce contaminants into the water system. Contamination caused by fire and back suction due to loss of pressure could cause a widespread water quality emergency, as observed with California's Paradise Fire and Santa Rosa fires. After the Paradise Fire, benzene and other volatile organic compounds (VOCs) were detected as burned plastic pipes, meters or toxic waste flushed into the water system during the fire.[1] More importantly, breakdowns in the distribution system can cause a loss of system pressure that limits firefighting ability.

Pumps and Motors
The District has pumps and motors located throughout the system to move water at various facilities and to residences at higher elevations. Many of these installations are located in the WUI and susceptible to fire loss. Loss of this equipment could make delivery of groundwater to certain zones impossible and limit fire-fighting ability.

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[1]Wilson (2018). "California wildfires caused unexpected benzene contamination of drinking water." Chemical and Engineering News. Source: https://cen.acs.org/environment/water/California-wildfires-caused-unexpected-benzene/96/i26

Fire Related Water Treatment Issues

In addition to structure loss, the risk of fire in the Cachuma Watershed presents a challenge to water treatment. Fires in the watershed are particularly destructive as fires increase carbon particles released into the atmosphere. Carbon and burned organic material deposited in the watershed and surface waters create treatment challenges downstream. Wind, water runoff from winter storms, and erosion carry ash and precipitation into the lake, increasing organic matter. This increased organic loading creates variable water quality conditions, and the additional treatment necessary to address these challenges can result in an increased concentrations of disinfection byproducts (DBPs), particularly trihalomethanes (THMs), that form when chlorine used to disinfect the water reacts with natural organic matter. THMs are regulated under a maximum concentration limit (MCL) set by the United States Environmental Protection Agency (EPA) for drinking water quality, which is the legal threshold limit on the amount of a substance that is allowed in public water systems. During extreme storm events, or after particularly bad fires surface water conditions may exceed the District's treatment capacity.

Threats to Power Grid and Water Delivery

Wildfires can cause power outages by destroying an electric grid or a transmission tower. All nine of the District's groundwater wells depend on electricity to pump water from the groundwater basin. In the event of a power outage, the District's ability to use pump and distribute groundwater to meet the health and safety needs of its customers would be adversely affected. The District has a limited ability to store water, so if a power outage were to last for several weeks, the District may need to declare a water shortage emergency and secure emergency water and power.

Current Mitigation Strategies (Element C1.a)

While it is not possible to eliminate the threat of wildfire, the District engages in a number of proactive mitigation strategies. These include:

- Active brush clearance and maintenance around facilities located in the WUI. This has protected structures and minimized losses at facilities located in burn areas.
- Coordinate actively with local Emergency Operations Command to monitor threats to District facilities and protect critical public infrastructure.
- Filling District reservoirs and CDMWTP settling pools in advance of hot weather and Santa Ana events to ensure water is available for fire suppression and community need.
- Researching, modeling, testing and piloting a number of technologies to address water quality issues associated with wildfire.
- Flushing the distribution system of sediment and mineral deposits periodically to improve water quality. More frequent flushing of fire hydrants is planned in the future to decrease how long water stays in areas of the system with low demand.
- Reducing pre-chlorination levels to the minimum possible while still preventing algae growth in the basins at the CDMWTP.
- The use of powder activated carbon (PAC) and granular activated carbon (GAC) filters at CDMWTP.

- Optimizing storage in distribution reservoirs to during periods of normal operations to decrease the time water spends in the system to improve water quality, and reduce THM formation.

Improvement to Current and New Mitigation Strategies (Element C1.b and C4.b)
Additional strategies are needed to further mitigate fire impacts, and protect against new vulnerabilities which are not adequately covered by existing efforts. Identified strategies for mitigating wildfires are described below:

1. Power Reliability at the Wells, Pump Stations, and Remote Facilities
The District's nine groundwater wells, six pumping stations, and equipment at remote facilities are susceptible to power outages if a wildfire disables the electrical power grid or transmission towers. Important equipment that relies on electrical power includes: pumps and motors that extract and produce groundwater; pump and motors at pumping stations that lift water to high elevations to ensure sufficient fire-fighting pressures; chemical treatment equipment to treat water at wells (i.e., chlorination); pressure and level-reading equipment that is relayed through the District's SCADA system for operational management; and treatment equipment to treat for water quality (e.g., tank mixers, blowers, aerators). An independent power source at each these various facilities would ensure the District could continue to serve customers during an emergency and serve hydrants with sufficient pressure for fire-fighting at higher elevations. Options for independent power sources include solar panels with battery storage at sites with sufficient space and low-demand for power, or back-up generators.

2. Preventing Backflow Contamination during Fires
Backflow is caused by a backsiphonage or a backpressure condition in the distribution system. Backsiphonage may occur when the pressure drops below atmospheric pressure and creates a vacuum that may pull unsafe substances into the distribution system. These conditions have a high potential of occurring during wildfire conditions when water demand for fire-fighting may cause a drop in pressure, or when facilities are damaged or melted. Backflow prevention assemblies are designed to prevent backflow of contaminants or pollutants from entering the distributions system from homes or commercial properties at the meter, where unsafe substances can preside. Although the District requires backflow prevention assemblies on new, upsized or downsized meters, by installing additional backflow prevention assemblies where currently not required in high fire risk areas, the chance of backflow contamination during emergencies is lessened.

3. Wildfire Water Quality Mitigation
Wildfire effects on water quality are likely to persist for many years, as evidenced by the Zaca Fire, where spikes in organic matter did not reduce to pre-Zaca levels in the lake until approximately ten years later. The District is pilot testing several potential treatment approaches to address declining water quality issues at Lake Cachuma, both at the District's CDMWTP and reservoirs. These could include installing covers on the sedimentation, flocculation, and filter basins to reduce chemical loss, lower temperatures, and reduce algae growth; new treatment technologies within the plant's treatment system to decrease organic

matter levels; and, the addition of reservoir aeration equipment designed to remove THMs from the distribution system. It is unlikely that any single strategy will provide a comprehensive solution but rather that a variety of approaches will be necessary to ensure that after wildfires, state and federal drinking water standards can continue to be met on a long-term basis.

Earthquake (Medium Probability/High Impact)

Description of Hazard (Element B1.a)

An earthquake is caused by a release of strain within or along the edge of the Earth's tectonic plates producing ground motion and shaking, surface fault rupture, and secondary hazards, such as ground failure. The severity of the motion increases with the amount of energy released, decreases with distance from the causative fault or epicenter, and is amplified by soft soils. Even short duration earthquakes can cause massive damage.

The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses such as movement of furniture and facilities, and/or total failure and destruction. The scale currently used in the United States is composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction.

The Richter scale (Table 1) is logarithmic. Each one-point increase corresponds to a 10-fold increase in the amplitude of the seismic shock waves and a 32-fold increase in energy released.

Table 1. Richter Scale.

Richter Magnitudes	Earthquake Effects
Less than 3.5	Generally not felt, but recorded.
3.5 - 5.9	Often felt, but rarely causes damage.
Under 6.0	Slight damage to well-designed buildings. Can cause major damage to poorly constructed buildings over small regions.
6.1-6.9	Can be destructive in areas up to about 100 kilometers across residential areas.
7.0-7.9	Can cause serious damage over larger areas.
8 or greater	Can cause serious damage in areas several hundred kilometers

Peak ground acceleration (PGA) measures the strength of ground shaking. Larger peak ground accelerations result in greater damage to structures. PGA is used to depict the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (10%, 5%, or 2%) of being exceeded in 50 years return period. These values are often used for reference in construction design, and in assessing relative hazards when making economic and safety decisions.

After earthquakes, some regions may be prone to liquefaction. Liquefaction is the phenomenon that occurs when ground shaking causes loose, saturated soils to lose strength and act like viscous fluid. Liquefaction causes two types of ground failure: (1) lateral spread and (2) loss of bearing strength. Lateral spreads develop on gentle slopes and entail the sidelong movement of large masses of soil as an underlying layer liquefies. Loss of bearing strength occurs when the soil supporting structures liquefy, causing the structures to settle; resulting in damage and, in some cases, collapse.

On level ground, liquefaction results in water rising to the ground surface. On sloping ground, liquefaction can usually result in slope failure, such as the Sheffield Dam failure in the aftermath of the 1925 Santa Barbara earthquake. Liquefaction risk is considered high if there are soft soils (Types D or E) present. The National Earthquake Hazards Reduction Program (NEHRP) rates soils from hard to soft, and gives the soils ratings from Type A through Type E. The hardest soils are rated Type A, and the softest soils are rated Type E.

The majority of the soils in within the District territory are types A-C, with some areas having type D. There have been no Type E soils identified. (NOTE: A further discussion of soils can be found in the Santa Barbara County Comprehensive Plan Seismic Safety and Safety Element, along with maps of the expansive soils and collapsible soils problems ranking). Liquefaction risk is also determined by depth-to-groundwater. Most of the low coastal plain and valley bottoms are underlain by alluvium and given a moderate rating with respect to liquefaction potential.

Vulnerability to Hazard (Element B3.b)

The District's service area is located in a high seismic activity zone in the Transverse Range geologic province. Movement of continental plates manifest primarily along the San Andreas Fault system. The closest area of the San Andreas Fault is situated approximately 44 miles northeast of the Goleta Valley. Active faults in the San Andreas Fault system that fall within District include the Nacimiento, Ozena, Suey, and Little Pine faults. Other active faults in the region include the Big Pine, Mesa, Santa Ynez, Graveyard-Turkey Trap, More Ranch, Pacifico, Santa Ynez, and Santa Rosa Island faults. The Goleta Valley is also potentially susceptible to earthquakes from the offshore and onshore fault system of the Ventura-Pitas Point Fault that is capable of producing 8.0 earthquakes as strong as the San Andreas Fault. The Ventura-Pitas Point Fault runs westward 60 miles from Ventura, through the Santa Barbara Channel, and beneath the Santa Barbara and Goleta.

The District's ability to serve water is at risk if an earthquake were to collapse the Tecolote Tunnel. The Tecolote Tunnel is the only pipeline connecting Lake Cachuma to the District's South Coast water distribution system. If the Tecolote Tunnel failed, water from Lake Cachuma (including State Water Project deliveries) could not be delivered to the South Coast. In this state of emergency, the District would only be able to serve water already in storage throughout the District's reservoirs until groundwater wells could come online. However, groundwater well facilities and well shafts may also fail in an earthquake of high severity. Until the Tecolote Tunnel is repaired, the health and safety of District customers would be at risk as the District would depend on reservoir storage capacity, which is limited to only a few days of drinking water supply, or the groundwater basin (which requires electricity) to supply water for its customers.

Besides the Tecolote Tunnel, the District's transmission mains and facilities are at risk for collapse and damage. Water quality could also be affected. The District would need to isolate areas of pipe collapse with critical valves to repair the damage. Depending on the condition and location of the pipeline, an event could result in an overall system shut down, or resulting in potential contamination from dirt and debris being introduced into the pipe.

Another major concern is earthquake-related power outages. All nine of the District's groundwater wells and various pump stations depend on electricity to pump water from the groundwater basin. More importantly, power is needed for treatment monitoring to ensure treated water meets all regulatory standards. In the event of a power outage, the District would be unable to use the groundwater wells to pump water, and the distribution system would not be able to deliver water to customers. If there is a failure of all water production and treatment systems, there is only enough water to meet minimum public health and safety needs for a short period before the stored water supply is exhausted.

Expected ramifications of an earthquake also include damage to U.S. Highway 101, State Route-154, Highway 150, and other critical access points. Disruption of transportation routes would affect chemical delivery to the CDMWTP, fuel deliveries to back-up generators, as well as the ability of staff and District contractors (well repair specialists, welders, etc.) who live out of the area to reach perform repairs and move in equipment. District's employees commute from outside of Goleta along highways vulnerable to shutdowns. Many of the District's facilities are accessed by unpaved roads and are susceptible to cracks, potholes, and landslides which could make the facilities inaccessible by car. With roads damaged, the District would face restrictions in transporting chemicals, staff and contractors for water treatment at various facilities.

Current Mitigation Strategies (Element C1.a)

Although the timing of earthquakes cannot be predicted, the District employs a number of proactive mitigation strategies:

- Equipment bracing for employee safety.
- Pipe support installation on header pipes, wells, and other facilities.
- Installing, maintaining and exercising isolation valves and interconnections with the neighboring water utility for access to back-up water supplies.
- Building in and designing "back up" and redundant infrastructure, such as back-up pumps and motors.
- Securing geotechnical analysis of soil stability at the Transmission Main at Van Horne Reservoir and susceptibility to future landslides and failure.
- Visual inspections of critical main transmission lines, including sections of the District's 42 inch Bishop Transmission Main conveying water from the plant to a majority of the District's distribution system.
- Completion of a Pipeline Creek Crossing Vulnerability Study, which identified and surveyed all pipeline creek crossings in the District's service area.

- Purchasing and maintaining equipment and inventory needed for emergency replacements of pipeline ruptures, valve breaks, and other failures of all sizes.
- Proactively managing chemical deliveries to the treatment plant and well sites to minimize potential disruptions.
- Checking facilities after small earthquakes for noticeable damage.

Improvements to Current and New Mitigation Strategies (Element C1.b and C4.b)

Additional strategies are needed to further mitigate against earthquakes, and protect against new vulnerabilities not adequately covered by existing efforts. Identified mitigation strategies for mitigating earthquake damage and improving emergency response times include:

1. Seismic Vulnerability Study

Very few water utilities have begun to evaluate risks and vulnerabilities associated with seismic events. By exploring the potential risk levels of seismic events, and by selecting and implementing appropriate mitigation strategies, the District can take important steps to safeguard the health and well-being of its customers and staff and protect the District's assets. A Seismic Vulnerability Study would include an inspection of all facilities to identify inadequate anchorage and recommend short- and long-term projects for lessening earthquake vulnerabilities. Facilities for inspection and review include CDMWTP, reservoirs, wells, pressure relief valves, and booster pump stations. The study can also identify personnel who can perform post-earthquake building inspections for safety, inform an earthquake response plan, and additional earthquake modeling.

2. Building and Facility Retrofits and Improvements

Seismic building and facility improvements are cost-effective projects to increase water system reliability during earthquakes. Ceiling and floor bracing of the District's headquarters and water treatment plant buildings would allow uninterrupted, continual functionality of critical systems, such as the Supervisory Control and Data Acquisition system (SCADA), which monitors the treatment and distribution systems. These buildings, as well as buildings storing chemicals and electrical equipment, may not be designed to accommodate earthquake loading and may collapse when subjected to lateral loading. Small improvements include bracing, pipe supports, joint supports, anchoring and the replacement of inflexible joints with flexible or ball joints. For reservoirs and chemical storage tanks, improvements could help lessen the disruption of a significant earthquake. Reservoir and tank retrofits and improvements can include: automatic shutoff valves to prevent large leaks; upgrading the freeboard and roof to handle potential water waves generated from an earthquake; reservoir anchorage or evaluation of the reservoir foundations to mitigate horizontal seismic forces; installing bracing rods; or, reinforcing pipe connections with flexible couplings.

Lastly, specific attention to and prioritization of seismic improvements at critical facilities near hospitals and community buildings can also help post-earthquake response. This includes the ability to isolate the system, or supplying key facilities through nearby wells.

3. Projects to Store and Deliver Back-Up Water Supplies
During a severe earthquake event, vulnerable transmission lines may fail. Pressure zones throughout the distribution system may become isolated. Building in redundancy and access to back up water supplies reduces water service interruptions. For example, the District's 36 inch transmission main can be extended to connect two pressure zones, the Ellwood and 230 Pressure Zones, downstream of the District's treatment plant. If the Ellwood Zone lateral failed, then the Ellwood pressure zone would no longer be able to receive water from the water treatment plant. Extending the transmission main pipeline several miles would allow a backup water supply to the Ellwood Zone. The Edison Pump Station currently can move water to the Ellwood Zone, but in an emergency, the pump station lacks capacity to meet demand and relies on the vulnerable electric grid. Upsizing and building redundancy at the Edison Pump Station with backup power would also create a backup water supply for the Ellwood Zone.

Additionally, should the 42 inch transmission main fail between the treatment plant and the Van Horne Reservoir, the District would be limited in its ability to move water alternatively through the Ellwood Zone to the remainder of the District's system. The proposed Corona Pump Station, located at the treatment plant's Corona Reservoir, would enhance emergency response by allowing the quick movement of water from Corona Reservoir to the Ellwood Lateral, lessening response times and potential disruptions. This is especially critical in the event the District were running on surface water when the earthquake occurred, as starting up the groundwater wells and transitioning operations would be difficult in the event of a power failure. The Corona Pump Station could come online quickly and respond to a transmission main failure with little disruption.

4. Emergency Power for Wells and Pump Stations
Emergency power generation is critical in earthquake emergencies as electrical outages may occur as a result of fallen power lines and transmission towers. Solar and battery storage at the District's wells, pump stations, and remote facilities would mitigate power interruptions. Back-up generators at these sites can also provide necessary power as long as fuel deliveries are maintained.

5. Pipe Replacements and Relocations
Many of the District's pipes do not meet updated Seismic Guidelines for Water Pipelines (ALA, 2015) as they were primarily installed before 1960. As such they are vulnerable to failure during earthquakes. Pipes for retrofit, relocation or replacement can be prioritized based on age, location in high liquefaction areas or areas that traverse active faults. Buried pipe can also be replaced with seismic resistant pipe with restrained joints. Or, certain pipes can be renewed with HDPE material to extent the pipe's service life and durability during an earthquake.

6. Cathedral Oaks 20" Bypass Waterline

This project maintains adequate potable water and fire service to approximately 4,000 District customers in the event of a failure of an upper portion of either the Glen Annie Lateral or the 42-inch Transmission Main that runs along Cathedral Oaks Road. Should either line fail, alternative water service would need to be provided in an effort to maintain an acceptable level of service to the District's customers. The Cathedral Oak 20" Bypass Waterline consists of installing approximately 8,500 feet of 20-inch waterline in Cathedral Oaks Road between Glen Annie Road and Camino Laguna Vista. At Glen Annie Road, the proposed waterline would connect to the District's Glen Annie Lateral. At Camino Laguna Vista, the proposed waterline would connect to the District's 42-inch Transmission Main. The construction of the proposed waterline would loop the two transmission mains allowing for back-up water supply to either zone in the event of a transmission main or lateral failure.

7. Conditions Assessments of Vital Pipelines: Transmission Main, and Recycled Water Main

Pipeline condition assessments diagnose existing vulnerabilities within pipelines to determine the estimated remaining service life, as well as at-risk pipes recommended for repair or replacement. Areas of pipe showing signs of deterioration or corrosion are most at risk for failure during an earthquake or other emergency event. By proactively assessing pipeline condition, the District can plan and prioritize pipeline repairs and replacements, lessening the potential for major failures that disrupt operations or damage property. In 2018, the District began inspection of 10,000 feet of the forty five year old 42" transmission main. The condition of the remaining transmission main, and the recycled water mainline, still need to be completed.

8. Transmission Main Stabilization for Erosion Control

The District has observed erosion and slope instability around areas of its transmission main, making it vulnerable to rupture in the event of an earthquake or major flash flooding. By identifying areas of the transmission main located in high liquefaction soils, unstable slopes, and historical landslide areas, the District can proactively employ erosion control tools. This project will consider the use of the full suite of potential tools and techniques when determining appropriate mitigation measures (e.g., ground armoring, special drainage measures, terracing, buttressing, rock fill, piling, nailing) to stabilize the slope around the transmission main. The District has started visual inspections of the main, but additional segments, including portions located in remote areas, remain.

9. Remote Water Quality Sensors in the Distribution System

The District is required to monitor water quality downstream of the treatment plant at designated sampling locations. Monitoring includes pH, temperature, chlorine residual and conductivity. This mitigation project would expand the District's water quality monitoring for remote areas of the distribution system, including areas where access is limited, where pipe or facilities failures may go unnoticed, or where increased monitoring of water quality would allow the District to respond quickly to changing water quality conditions. Remote water quality monitoring allows for early detection of pipe failures, cross-connection contamination, and other unpredictable events in the distribution system. After an emergency, remote water quality monitoring facilitates targeted restoration to affected areas of the distribution system without the need to send operators to sample across the system. This significantly reduces response times after an emergency, especially since currently 28 sites must be manually inspected by an operator.

10. Relocation of 3,000 feet of 42" Transmission Main

The District has observed shallow land sliding and ground movement along a 3,000 foot section of a 42 inch transmission main north of Van Horne Reservoir nearby Los Carneros Creek. The District's transmission main conveys water from the CDMWTP to a majority of the District's distribution system. A transmission main failure would force the District to either move water through the Ellwood Zone (with capacity limited to the 16" Ellwood Lateral and Edison Pressure Relief Valve), or shift to groundwater which at various times is insufficient to meet peak demand.

Professional geotechnical engineering review confirmed a high risk for future localized creep and land sliding, putting the District's vital transmission main at risk of rupture. It was recommended the District relocate the transmission main to either: a more stable rock formation to the east to avoid sloping terrain and landscape risks; or to a flatter area to the west with more stable, alluvial soils and better access. This project would include design and construction of the most cost-effective relocation of the transmission main to a corridor with less geologic hazards.

Flood (High Probability/Medium Impact)

Description of Hazard (Element B1.a)

A flood is a general and temporary condition of partial or complete inundation on land that is normally dry. Several factors determine the severity of floods, including rainfall intensity and duration. Other causes of flooding can include a ruptured dam or levee, rapid ice or snow melting in mountains, or under-engineered infrastructure. A large amount of rainfall in a short time can result in flash flood conditions. The National Weather Service's definition of a flash flood is a flood occurring in a watershed where the time of travel of the peak of flow from one end of the watershed to the other is less than six hours.

Another form of flooding occurs when coastal storms produce large ocean waves that sweep across coastlines making landfall. Storm surges can inundate coastal areas and cause flooding. If a storm surge coincides with high tide, the water height will be even greater. The Goleta Valley historically has been vulnerable to storm surge inundation associated with tropical storms and El Nino weather events.

Vulnerability to Hazard (Element B3.b)

The geographical location, climate, and topography of Goleta Valley make the District's service area prone to flooding. Regional floods typically occur during the rainy season or during heavy rainfalls after long dry spells. Due to the Mediterranean climate and the variability of rainfall, stream flow in Goleta is highly variable and directly related to rainfall.

The drainages in the Goleta and South Coast region are characterized by high intensity, short duration runoff events resulting from the relatively steep decline from the top of the Santa Ynez Mountains to the Pacific Ocean. Runoff from high intensity, short duration storm events can cause inundation of over stream banks and adjacent areas. Flood water carries debris, such as sediments, rocks, and downed trees, potentially damaging District facilities. Debris also plug culverts and bridges, create erosion and sloughing of banks, and can decrease channel capacity due to sedimentation.

While the District's reservoirs are enclosed with a roof or located below ground, vents and hatches near the top of water storage reservoirs may be susceptible to overland flood events if reservoir sites are not well designed for proper drainage. The District's CDMWTP has several ponds and basins that may also be vulnerable to flash flooding.

The District's main vulnerability to flooding is inundation to facilities and assets where water can cause damage to electrical equipment, such as pumps, motors, telemetry, machinery, etc. District assets, such as wells, motors, and generators located close to creeks or at creek crossings are most susceptible to flooding damages. Facility operations must halt until the damaged devices are replaced or repaired. Water damage can be severe and almost always causes electrical equipment to short circuit. Irreparable devices further delay operations because equipment needs to be replaced, and specialized parts can have long lead times.

Flooding can also prevent access to critical facilities. Floods inundate roads, leaving debris that was carried with the flood on the road to form a blockade, and/or damaging the road itself. In the event roads are impassable, key personal cannot access remote District's facilities. For example, Glen Annie Road is the only access road to the District's CDMWTP and is susceptible to damage from flooding as it crosses McCoy Creek. The water treatment plant requires weekly chemical resupply and shift rotations by highly trained operational staff. If necessary treatment chemicals are not delivered, or operators are unable to reach the plant, the District cannot treat and serve surface water.

Another major concern is that floods can cause power outages by inundating an electric grid. All nine of the District's groundwater wells and various pump stations require electricity to pump water. In the event of a power outage, the District would be unable to use the groundwater wells or pump stations in the distribution system to deliver water to customers.

Current Mitigation Strategies (Element C1.a)

The District employs several mitigation strategies to prevent damage from flooding at its facilities:

- Creek crossing retrofits where the CDMWTP access road crosses McCoy Creek.
- Flood prevention design best practices for electrical equipment at motor control centers (MCCs), variable frequency drives (VFDs) and other electrical equipment.
- Groundwater wellhead protection to prevent outside water sources and contaminants from contaminating groundwater wells.
- An analysis of CDMWTP Access Road alternatives and design to address places where undercutting from McCoy Creek has reduced the Glen Annie access road to the plant to a single lane.

Improvements to Current and New Mitigation Strategies (Element C1.b and C4.b)

Additional mitigations are needed to further protect against flooding. Identified mitigation strategies for mitigating flood damage are described below:

1. Flooding and Inundation Vulnerability Study

The District currently lacks comprehensive knowledge of where assets, like critical electrical equipment, chemical storage, pumps and motors, water storage reservoirs, and treatment ponds, may be vulnerable to varying degrees of flood events. A Flooding and Inundation Vulnerability Study would help identify assets below various flooding levels (e.g., 1% flood events or 5 year flood events), and recommend retrofits and replacements needed to avoid damage from flooding and inundation. This can also include wellhead protection, electrical outlet relocations, updated drainage design and implementation, or green infrastructure projects.

2. Flood Barriers around Key Assets

Many cost-effective projects can be implemented to protect critical assets from flooding inundation. These can include: relocating critical outlets that are below potential flood inundation levels or potential water damage to automatic transfer switches; elevating other electrical equipment vulnerable to flood events; providing backup emergency power (through backup generators or solar energy with battery storage); and, building flood control methods to modify runoff and manage stormwater through infrastructure or green infrastructure.

3. Access Road Improvements

The District's CDMWTP access road is critical to operating the CDMWTP. Due to flash flooding along McCoy Creek, which parallels and crosses the access road, a section of the bank continues to erode. The District has evaluated alternatives to mitigate flood erosion damage, including sheet pile reinforcement or a new access road to avoid future erosion. Both of these mitigation strategies would lessen the effect of flooding on the CDMWTP access road and ensure continued access to critical treatment facilities during emergencies. Improving road drainage or structural reinforcement at these and other remote facilities would further mitigate damage caused by flooding.

4. Hollister Booster Pump Station Relocation

The District's Recycled Water Hollister Booster Pumping Station pumps recycled water to customers for the purposes of landscape irrigation. The pumping station is located in an underground vault at Hollister Avenue and South Glen Annie Road along the recycled water main. Because of the potential for flooding the District is evaluating the feasibility of installing a pit-less booster pump station. A pit-less booster pump station would mitigate potential failure due to the flooding, and lessen disruptions of recycled water supplies that conserve potable water for higher uses.

5. Vulnerable Creek Crossing Repairs

Currently there are approximately 100 known locations where District pipes span either over or under creek crossings. These crossings require periodic inspection to identify recent erosion and the need to either repair or relocate the pipe if extensive erosion has occurred. Creek crossing pipe repairs will help prevent waterline failure or emergency events in the future. Out of the 100 crossings inspected to date, staff has identified 10 sites for improvement.

Tsunami (Low Probability/Medium Impact)

Description of Hazard (Element B1.a)

A tsunami is a series of long waves generated in the ocean by the sudden displacement of a large volume of water. Underwater earthquakes, landslides, volcanic eruptions, meteor impacts, or onshore slope failures can also cause tsunamis. Tsunami waves travel at speeds averaging 450 to 600 miles per hour. As a tsunami nears the coastline, its speed and wave length decrease, and its height increases. Depending on the type of event that creates the tsunami, as well the remoteness of the event, the tsunami could reach land within a few minutes or after several hours. Low-lying areas could experience severe inland inundation of water and deposition of debris more than 3,000 feet inland.

Vulnerability to Hazard (Element B3.b)

The relative threat for local tsunamis in Santa Barbara can be considered low due to low recurrence frequencies. Large, locally-generated tsunamis are estimated to occur once every 100 years. Thirteen possible tsunamis have been observed or recorded from local earthquakes between 1812 and 1988 in the Santa Barbara region. There have been no recorded tsunamis on Goleta shores since 1988.

Major faults of the San Andreas zone, although capable of strong earthquakes, cannot generate any significant tsunamis. Only earthquakes in the Transverse Ranges, specifically the seaward extensions in the Santa Barbara Channel and offshore area from Point Arguello can generate local tsunamis of any significance. The reason for this may be that earthquakes occurring in these regions result in a significant vertical displacement of the crust along these faults. Such tectonic displacements are necessary for tsunami generation.

Earthquakes occurring along submarine faults off Santa Barbara could generate large destructive local tsunamis.[2] Research performed by the County of Santa Barbara provides some documentation that two tsunamis were generated from two major earthquakes in the Santa Barbara region in December of 1812. The size of these tsunamis may never be known with certainty, but there are unconfirmed estimates of 15 feet waves along the Gaviota Coast (within the District's service territory), 30-35 feet waves in Santa Barbara, and waves of 15 feet or more in Ventura. These estimates are found in various literature and based on anecdotal history only.

Santa Barbara County evaluated a number of critical facilities against the extreme tsunami inundation zone overlay to determine which fell within the geographic extent of a tsunami hazard. Only one location in the District service territory (the Goleta Pier at Goleta Beach State Park) fell within the risk area. The District maintains several critical facilities in and around the pier at, including: Goleta Sanitary District Recycled Water Booster Pump Station, recycled water transmission main pipes, distribution pipes and service lines, as well as a

[2] Rasmussen (2005). "1812 California Tsunami Carried a Ship Inland." Los Angeles Times. Source: https://www.latimes.com/archives/la-xpm-2005-jan-09-me-then9-story.html

nearby groundwater well (Airport Well) at a similar elevation near the Goleta Slough. It is anticipated that a tsunami could adversely affect these facilities.

Current Mitigation Strategies (Element C1.a)

The District is proactively performing research on alternatives to prevent damage from tsunami and flooding at its facilities near Goleta Beach:

- The District's existing recycled waterline at Goleta Beach (800 feet of 18 inch pipeline) is vulnerable to damage from ongoing beach erosion and/or significant erosion from storm surge or tsunami events. The District is in process of conducting a design alternatives study to determine the best relocation strategy for the recycled water line.

Improvements to Current and New Mitigation Strategies (Element C1.b and C4.b)

Additional mitigations are needed to protect against tsunamis and related impacts. Identified mitigation strategies for mitigating flood damage are described below:

1. Goleta Beach Recycled Water Line Relocation

Pending the results of an alternative design study to evaluate the potential relocation of the recycled water mainline at Goleta Beach, the District plans to eventually relocate the line. This waterline conveys approximately 1,000 AFY of recycled water to several large recycled water customers including the University of California Santa Barbara, various golf courses and other large landscaped areas for landscape irrigation and toilet flushing. Recycled water preserves water for potable uses, and damage to this line would result in a total system outage.

Existing Authorities, Policies, Programs and Recourses

(Element C1.a)

As a Special District with a governing Board, the District has the ability to set policy, raise funds, issue debt, and set water rates. The District relies on an adopted yearly budget, a Five Year Infrastructure Improvement Plan, and an adopted procurement policy to manage, plan for and maintain water service to customers. Management of the water supply portfolio is informed by The Water Supply Management Plan, the Groundwater Management Plan, and the Urban Water Management Plan, all of which are updated every five years. A Water Shortage Emergency and Drought Contingency Plan was adopted in 2014. The District also completed a Stormwater Capture Master Plan, and a Recycled Water Feasibility Study to explore options for developing alternative water supplies.

The District also runs a conservation program that includes significant customer education on water use restrictions, tips on saving water, and is a member of the California Water Efficiency Partnership, and the Regional Water Efficiency Program. District rebate programs distribute water saving devices such as hose nozzles and low flow shower heads, and provide customers with financial assistance to implement water saving irrigation upgrades, change out landscaping for waterwise plants, and purchase water efficient washing machines.

District rates are informed by a Cost of Service Study to capture the cost to serve each customer class, and are structured according to best practices in the industry to include tiered pricing.

Ability to Expand and Improve on Existing Policies and Programs

(C1 b.)

The District periodically reviews and updates policy documents and procedures as new information becomes available, and incorporates best management practices. The District reviews changes to existing policies and programs through both its Water Management and Long Range Planning Committee, and its Administration Committee prior to adoption by the Board of Directors. After a natural disaster or emergency incident, the District reviews protocols and updates policies and procedures when appropriate. For example, during the recent drought several code amendments were made to clarify or strengthen water use restrictions, and remain consistent with State guidelines.

Repetitive Loss Information and NFIP Participation (Element B4 and C2)

As a Special District, the Goleta Water District is not eligible to participate in the NFIP, and thus does not have any NFIP repetitive loss properties. Instead, please refer to the County of Santa Barbara Local Hazard Mitigation Plan.

Mitigation Actions (Element C4.b and C5.b)

The District identified and analyzed a comprehensive range of specific mitigation actions and projects to reduce the effects of the following five hazards according to impact and probability:

Rank	High Impact	Medium Impact	Low Impact
High Probability	Drought & Water Shortage Wildfire	Flood	
Medium Probability	Earthquake		
Low Probability		Tsunami	

The District will be the responsible agency for implementing and administering all mitigation actions below (**Element C5.b**). Potential funding sources and expected timeframes for completion are detailed for each mitigation action, listed below (**Element C5.b**).

Mitigation actions for hazards posing a threat to the District's jurisdiction are detailed below by hazard and by action number:

Hazard	Mitigation Actions
Drought & Water Shortage	6
Wildfire	10
Earthquake	18
Flood	15
Tsunami	8

Summarized List of Hazard Mitigation Actions:

#	Mitigation Action	Hazard(s)
1	Booster Pump Station upgrades at Edison and Van Horne	Drought & Water Shortage, Wildfire, Earthquake
2	Corona Del Mar Water Treatment Plant (CDMWTP) upgrade for Disinfection Byproduct Control	Drought & Water Shortage, Wildfire
3	Reservoir Aeration Treatment Systems	Drought & Water Shortage, Wildfire
4	Emergency Back-up Power at District Well Sites	Wildfire, Earthquake, Flood, Tsunami
5	Hollister Booster Pump Station Replacement	Drought & Water Shortage, Flood
6	Emergency Back-up Power at District Pump Stations	Wildfire, Earthquake, Flood, Tsunami
7	Seismic Upgrades at Reservoirs	Earthquake, Flood
8	Solar Power Generation and Battery Storage at CDMWTP, Offices, and Remote Facilities	Wildfire, Earthquake, Flood, Tsunami
9	City of Santa Barbara Interconnection	Drought & Water Shortage, Wildfire, Earthquake, Flood, Tsunami
10	Corona Pump Station	Earthquake
11	Covers on CDMWTP Sedimentation Basins	Drought & Water Shortage, Flood
12	Seismic Vulnerability Study	Earthquake
13	Seismic Building and Pipe Improvements	Earthquake
14	Cathedral Oaks 20” Bypass Waterline	Earthquake, Flood
15	Seismic Pipe Replacements	Earthquake
16	Conditions Assessment of Critical Transmission Mains	Earthquake
17	Transmission Main Stabilization for Erosion Control	Earthquake, Flood
18	Conditions Assessment of Recycled Water Mains	Earthquake, Tsunami
19	Vulnerable Creek Crossing Repairs	Earthquake, Flood
20	Flooding Vulnerability Study	Flood
21	Flooding Barriers around Key Assets	Flood
22	CDMWTP Access Road Improvements	Flood
23	Recycled Waterline Relocation at Goleta Beach State Park	Tsunami
24	Backflow Prevention Program to prevent Water Contamination	Wildfire
25	Remote Water Quality Sensors in the Distribution System	Wildfire, Earthquake, Flood, Tsunami
26	Groundwater Well Chemical Storage Tank Upsizing	Wildfire, Earthquake, Flood, Tsunami
27	Relocate 3,000 feet of 42” Transmission Main	Earthquake

Mitigation Action #1	In Progress
Project Description: Booster Pump Station upgrades at Edison and Van Horne. • Convert temporary pump stations into permanent facilities to move back-up water supplies to isolated pressure zones in the system, and distribute water when surface water supplies are interrupted from Lake Cachuma (during drought, pipeline breaks, etc.). • Upgrade aging pumps and equipment to increase pumping capacity, reliability and operational flexibility. • Enhanced pressure pumps will improve the movement of water throughout the distribution system since the majority of existing District pipelines were designed to deliver surface water through a gravity feed system. • Ensures pump stations will meet new code design standards, will be fire and earthquake resistant, and enhance fire-fighting capabilities at higher elevations in the system. • This project is consistent with the goals of United States Bureau of Reclamation (USBR) under the Drought Response Program.	
Applicable Hazards: Drought & Water Shortage, Wildfire, Earthquake	
Existing and Potential Resources: District 2020-2025 IIP, USBR Water Smart Drought Response Program, DWR Prop 1E Disaster Preparedness	
Target Completion Date: Depends on funding.	
Additional Comments / Status Report: A 100% engineering design has been prepared and the project is ready for construction. Projects are included in the 2020-2025 Infrastructure Improvement Plan to be reviewed for adoption by the Board in spring of 2020.	

Mitigation Action #2	In Progress
Project Description: Corona Del Mar Water Treatment Plant (CDMWTP) upgrades for Disinfection Byproduct Control • The District studied treatment alternatives and identified the most cost-effective options for treating and removing organic matter, and reducing THMs. • Small-scale treatment testing is currently underway to determine the feasibility of these plant upgrades. • The treatment project has the dual benefit of also removing and treating for other chemical parameters and yet-to-be regulated contaminants of emerging concern. • Project is phased and will depend on changing water quality conditions and funding.	
Applicable Hazards: Drought & Water Shortage, Wildfire	
Existing and Potential Resources: Thomas Fire Grants, District 2015-2020 and 2020-2025 IIP	
Target Completion Date: 2025	
Additional Comments / Status Report: Testing and preliminary designs are being conducted with funding in the 2015-2020 IIP. The project portion is included in the 2020-2025 Infrastructure Improvement Plan to be reviewed for adoption by the Board in spring 2020.	

Mitigation Action #3	2020-2023
Project Description: Reservoir Aeration Treatment Systems • In-tank aerations systems are an industry accepted, cost-effective way to treat for disinfection byproducts within the water distribution system that result from increased organic matter resulting from wildfire runoff and drought-related impacts to Lake Cachuma. The District conducted a study to inform the most cost-beneficial solutions to address disinfection byproduct treatment and tank aeration was a recommended option. • In-tank or fixed-spray nozzle aeration volatilize disinfection byproducts, like THMs, created during the reaction of chlorine with organic matter and help the District meet THM drinking water standards. • The District has implemented successful aeration systems at two reservoirs, but additional aeration in the more remote areas of the system would substantially improve water quality.	
Applicable Hazards: Drought & Water Shortage, Wildfire	
Existing and Potential Resources: District 2015-2020 and 2020-2025 IIP	
Target Completion Date: Depends on funding.	
Additional Comments / Status Report: Preliminary designs for aeration and associated electrical infrastructure are in progress. The project is included in the 2020-2025 Infrastructure Improvement Plan to be reviewed for adoption by the Board in spring 2020.	

Mitigation Action #4	Not Funded
Project Description: Emergency Back-up Power at District Well Sites • Back-up emergency power is needed at District wells to provide water in the event water cannot be treated or delivered from Lake Cachuma or CDMWTP. • Back-up emergency power at District well sites will ensure that these facilities continue to operate even during power outages. • During recent wildfire events when electrical power was disrupted, the wells were turned off to avoid equipment failure. The District instead relied on surface water using a back-up generator at the CDMWTP.	
Applicable Hazards: Wildfire, Earthquake, Flood, Tsunami	
Existing and Potential Resources: DWR Prop 1E Disaster Preparedness	
Target Completion Date: Depends on funding.	
Additional Comments / Status Report: None	

Mitigation Action #5	2020-2025
Project Description: Hollister Booster Pump Relocation • This project will include the design, construction, and management of a pit-less recycled water booster pump station to replace the existing Hollister Booster Pump station, which delivers water to recycled water customers for landscape irrigation. • The pumping station is located in an underground vault at Hollister Avenue and South Glen Annie Road along the recycled water main, and vulnerable to flooding. The use of a pit-less submersible pump would mitigate the effects of future flooding, and prevent service interruptions.	
Applicable Hazards: Flood	
Existing and Potential Resources: District 2015-2020 and 2020-2025 IIP	
Target Completion Date: 2025	
Additional Comments / Status Report: The District has evaluated potential relocation sites and conducted long-term economic analysis on the pit-less pump option. The project is included in the 2020-2025 Infrastructure Improvement Plan to be reviewed for adoption by the Board in spring 2020.	

Mitigation Action #6	Not Funded
Project Description: Emergency Back-Up Power at District Pump Stations • The District operates six pumping stations that power pumps and motors used to lift water to higher elevations in the distribution system. • These pump stations cannot operate during electrical shutdowns. Failure of pump station would result in a lack of pressure to higher elevation residences and fire hydrants necessary for fire-fighting. • Emergency back-up power to pump stations can include onsite or mobile diesel generators for use during power outages.	
Applicable Hazards: Wildfire, Earthquake, Flood, Tsunami	
Existing and Potential Resources: DWR Prop 1E Disaster Preparedness.	
Target Completion Date: 2025	
Additional Comments / Status Report: None	

Mitigation Action #7	Not Funded

Project Description:
Seismic Upgrades at Reservoirs

- Many of the District's reservoirs were constructed before new seismic building requirements were in place and may be vulnerable to failure during significant earthquake events. Failure of reservoirs could result in flooding, loss of water storage, and damage to facilities and property downstream.
- Seismic upgrades at the District reservoirs will bring facilities in line with new code requirements and reduce the likelihood of failure. These upgrades can include: upgrading the freeboard and roof to handle potential water waves generated from an earthquake; reservoir anchorage or evaluation of the reservoir foundation to mitigate horizontal seismic forces; installing bracing rods; or, reinforcing pipe connections with flexible couplings.

Applicable Hazards: Earthquake, Flood

Existing and Potential Resources: Federal grants, including Hazard Mitigation Grant Program

Target Completion Date: Depends on funding.

Additional Comments / Status Report: None

Mitigation Action #8	Study In Progress

Project Description:
Solar Power Generation and Battery Storage at CDMWTP, Headquarters, and Remote Facilities

- Solar generation at the District Headquarters will provide energy for operations and the District's electric vehicle chargers, with long-term cost savings to the District.
- Increased energy generation and battery storage will decrease dependence on the grid and allow some District operations to continue in the event of a power outage.
- The District has conducted a brief feasibility and cost-benefit analysis of various solar options at the District Headquarters and CDMWTP. Solar power and battery storage at remote facilities may eliminate the need for new power connections to maintain the operations of treatment infrastructure, analyzers, and other transmitters at remote sites.
- Solar generation for CDMWTP may also provide coverage for settling basins, decreasing temperatures and algae growth, while also generating energy for the water treatment plant. Alternatively, solar generation can be installed on surrounding hillslopes.

Applicable Hazards: Wildfire, Earthquake, Flood, Tsunami

Existing and Potential Resources: Solar grants, District 2020-2025 IIP, USBR Water Smart WEEG

Target Completion Date: Unknown

Additional Comments / Status Report: The project is included in the 2020-2025 Infrastructure Improvement Plan to be reviewed for adoption by the Board in spring 2020.

Mitigation Action #9	Not Funded
Project Description: City of Santa Barbara Interconnection • The District and the City of Santa Barbara currently have three interconnections to supply or transfer water from one system to another in the event of an emergency. • Current delivery capacity from the City of Santa Barbara is 2 million gallons per day, less than the District's minimum public health and safety need, and in order to operate the District's groundwater wells must be shut down. The District can deliver only 1 million gallons per day to the City Santa Barbara. • The project involves construction of a new, larger connection (interconnect) between the water distribution systems of the District and the City of Santa Barbara. Potential capacity could increase by an additional 3 to 4 million gallons per day if constructed with a pump station based on analysis of system hydraulic pressures. • This project allows mutual assistance to agencies in the event of an emergency, such as a transmission line failure, earthquake, wildfire, or for a planned system shut down. Santa Barbara is also connected to Montecito and Carpinteria, and therefore a regional benefit would extend to the entire South Coast.	
Applicable Hazards: Drought & Water Shortage, Wildfire, Earthquake, Flood	
Existing and Potential Resources: Federal and State grants	
Target Completion Date: Depends on funding.	
Additional Comments / Status Report: None	

Mitigation Action #10	2020-2021
Project Description: Corona Pump Station • The project involves construction of a new, pump station at the Corona Reservoir. The Corona Pump Station will pump water from the Corona Reservoir to the Ellwood Reservoir via the Ellwood Lateral in the event of an emergency failure on the transmission main downstream of Corona Reservoir, and blend groundwater and surface water to improve water quality. A design has been finalized for the pump station. • In the event of a failure along the 42 inch transmission main between the Corona Reservoir and downstream, Van Horne Reservoir, the Corona Pump Station would allow water to be moved to the remainder of the District's distribution system with minimal disruption during emergencies.	
Applicable Hazards: Earthquake	
Existing and Potential Resources: District 2020-2025 IIP	
Target Completion Date: 2025	
Additional Comments / Status Report: Construction of this project is included in the District's 2020-2025 Infrastructure Improvement Plan for review and adoption by the Board in spring 2020.	

Mitigation Action #11	Not Funded
Project Description: Covers on CDMWTP Sedimentation Basins • The project involves installing covers on the District's CDMWTP sedimentation basins to decrease water temperatures and improve water quality. Covers lessen the potential for algal blooms and disinfection byproduct formation within the District's treatment process. • During droughts and flood events, debris, nutrients, and high organic levels produce changing water quality conditions at Lake Cachuma and present treatment challenges at the District's treatment plant. • Sedimentation basin covers are a solution used by many water treatment plants to cool water temperatures and mitigate the effect of organics on algal growth. Covers may be a more cost-effective solution than drilling additional groundwater production capacity, which provides an alternative source of water when surface water quality deteriorates. • Covers can also be integrated with solar panels.	
Applicable Hazards: Drought & Water Shortage, Flood	
Existing and Potential Resources: Solar grants	
Target Completion Date: Depends on funding.	
Additional Comments / Status Report: None	

Mitigation Action #12	Not Funded
Project Description: Seismic Vulnerability Study • This study would identify facilities with inadequate anchorage or high risk of failure during varying levels of seismic events, and recommend short- and long-term projects for lessening earthquake vulnerabilities. It could also include seismic modeling, earthquake resiliency planning, identification of vulnerable assets based on risk analysis, etc. • Facilities for inspection and review include CDMWTP, reservoirs, wells, pressure relief valves, and booster pump stations. • The study can also identify personnel who can perform post-earthquake building inspections for safety, inform an earthquake response plan, and additional earthquake modeling.	
Applicable Hazards: Earthquake	
Existing and Potential Resources: DWR Prop 1E Disaster Preparedness	
Target Completion Date: Depends on funding.	
Additional Comments / Status Report: None	

Mitigation Action #13	Not Funded

Project Description:
Seismic Building and Pipe Improvements
- Seismic bracing of the ceiling and floor of the District's headquarters, water treatment plant buildings, remote facility buildings and storage tanks would mitigate service disruptions to customers and protect critical systems, such as the Supervisory Control and Data Acquisition system (SCADA), which monitors the treatment and distribution systems.
- Small improvements include bracing, pipe supports, joint supports, anchoring and the replacement of inflexible joints with flexible or ball joints.
- For reservoirs and chemical storage tanks, automatic shutoff valves can be installed to prevent large leaks.
- Prioritization of seismic improvements at critical pipelines and wells near hospitals and community facilities can also help post-earthquake response.

Applicable Hazards: Earthquake

Existing and Potential Resources: DWR Prop 1E Disaster Preparedness

Target Completion Date: Depends on funding.

Additional Comments / Status Report: None

Mitigation Action #14	Not Funded

Project Description:
Cathedral Oaks 20" Bypass Waterline
- This project maintains adequate potable water and fire service to approximately 4,000 District customers in the event of a failure of an upper portion of either the Glen Annie Lateral or the 42-inch Transmission Main that runs along Cathedral Oaks Road.
- Should either line fail, alternative water service would need to be provided to maintain service to the District's customers.
- The project consists of installing approximately 8,500 feet of 20-inch waterline in Cathedral Oaks Road between Glen Annie Road and Camino Laguna Vista. At Glen Annie Road, the proposed waterline will connect to the District's Glen Annie Lateral. At Camino Laguna Vista, the proposed waterline will connect to the District's 42-inch Transmission Main. The construction of the proposed waterline would loop the two transmission mains.

Applicable Hazards: Earthquake, Flood

Existing and Potential Resources: None

Target Completion Date: District 2020-2025 IIP

Additional Comments / Status Report: The project is included in the 2020-2025 Infrastructure Improvement Plan to be reviewed for adoption by the Board in spring 2020.

Mitigation Action #15	Not Funded
Project Description: <u>Seismic Pipe Replacements</u> • Many of the District's pipes do not meet updated Seismic Guidelines for Water Pipelines (ALA, 2015) as they were primarily installed before 1960, and are vulnerable to failure during earthquakes. • Pipes can be prioritized based on age, location in high liquefaction areas or areas that traverse active faults. • Buried pipe can be replaced with seismic resistant pipe with restrained joints. Or, certain pipes can be renewed with HDPE material to extent the pipe's service life and durability during an earthquake.	
Applicable Hazards: Earthquake	
Existing and Potential Resources: DWR Prop 1E Disaster Preparedness	
Target Completion Date: Depends on funding.	
Additional Comments / Status Report: The District has identified estimated service life, known installation dates, and performed some pipe conditions assessments to classify vulnerable pipes for asset management. This data can also inform prioritization of pipe replacements.	

Mitigation Action #16	Not Funded
Project Description: <u>Conditions Assessment of Critical Transmission Mains</u> • Transmission main pipelines convey high volumes of water to customers from the District's wells and treatment plant. A failure on the transmission mainline may cause the system to drop pressure significantly, lessening pressure at hydrants for firefighting and potentially putting people out of water service. • Transmission mains require routine conditions assessments to identify vulnerabilities in the pipe where failures might occur due to earth movement, and interrupt water deliveries. • In 2018, the District began inspection of 10,000 ft of the 45-year old 42 inch transmission main with the latest industry technologies. • This project will continue assessment efforts on the remaining fourteen miles of transmission main pipe using remotely controlled robots and high resolution imagery to identify any major problems for repair, lessening the risk of failure during an earthquake event.	
Applicable Hazards: Earthquake	
Existing and Potential Resources: None	
Target Completion Date: 2025	
Additional Comments / Status Report: None	

Mitigation Action #17	2020-2021
Project Description: Transmission Main Coverage for Erosion • This project would identify areas of the transmission main most vulnerable to erosion and landslide activity, which could disrupt water deliveries from the CDMWTP. • It would determine the most effective structural stabilization and erosion control measures, as well as identify appropriate construction work areas and vegetation control to reduce landslide hazard potential. • The project will consider the full suite of potential tools and techniques to determine the appropriate mitigation measures (e.g., ground armoring, special drainage measures, terracing, buttressing, rock fill, piling, nailing) to stabilize the slope around the transmission main.	
Applicable Hazards: Earthquake, Flood	
Existing and Potential Resources: District 2020-2025 IIP	
Target Completion Date: Depends on funding.	
Additional Comments / Status Report: The District conducted a visual inspection of the integrity and condition along beginning transmission mainline. Remaining visual inspection is tentatively budgeted and planned for 2020-2025. Small landslides in 2019 have been observed around the transmission main.	

Mitigation Action #18	Not Funded
Project Description: Conditions Assessment of Recycled Water Main • Conditions assessments are an essential component of any utility's asset management program and infrastructure replacement planning. Conditions assessments help reduce the risk of pipe failure by identifying problems early, extending the useful life of pipe by relying on empirical data rather than theoretical estimates of useful life, and providing baseline data for future assessments. • The District maintains ten miles of recycled water main pipelines that convey up to 1,000 acre-feet per year of recycled water, offsetting the District's potable water demand. Due to the age of these pipes and the aggressive nature of recycled water, this main has been prioritized for review. • The project will include using video cameras in the transmission mains to gather visual and electromagnetic data about pipeline corrosion, separation, leaks or other potentially problematic conditions. The results of the assessment will be used to recommend localized pipeline repairs and/or replacements and establish a baseline for future conditions assessments.	
Applicable Hazards: Earthquake, Tsunami	
Existing and Potential Resources: CWSRF Water Recycling Programs	
Target Completion Date: Depends on funding.	
Additional Comments / Status Report: None	

Mitigation Action #19	2020-2025

Project Description:
Vulnerable Creek Crossing Repairs

- This project will continue the District's maintenance program to inspect, identify and repair exposed distribution piping at creek crossings.
- There are approximately 100 known locations where District water mains span either over or under creek crossings.
- These crossings require periodic inspection to identify erosion and the need to either repair or relocate the pipe to prevent waterline failure or emergency events in the future. Out of the 100 crossings inspected to date, staff has identified 10 sites that require improvement.

Applicable Hazards: Earthquake, Flood

Existing and Potential Resources: District 2020-2025 IIP, DWR Proposition 68

Target Completion Date: 2025

Additional Comments / Status Report: Creek crossing inspections have been performed with staff in-house surveys. This information has been gathered for emergency response purposes. The project is estimated to cost $530,000. The project is included in the 2020-2025 Infrastructure Improvement Plan to be reviewed for adoption by the Board in spring 2020.

Mitigation Action #20	Not Funded

Project Description:
Flooding Vulnerability Study

- The District currently lacks comprehensive knowledge of which specific assets, including critical electrical equipment, chemical storage, pumps and motors, water storage reservoirs, and treatment ponds may be vulnerable to flood events.
- A Flooding Vulnerability Study would help identify assets below various flooding marks (1% flood events or 5 year flood events), and recommend retrofits and replacements needed to avoid damage from flooding and inundation.
- This can also include well head protection, outlet relocations, updated drainage design and implementation, or green infrastructure projects.

Applicable Hazards: Flood

Existing and Potential Resources: DWR Proposition 68

Target Completion Date: Depends on funding.

Additional Comments / Status Report: None

Mitigation Action #21	Not Funded

Project Description:
<u>Flooding Barriers around Key Assets</u>

- This project will implement small, cost-effective projects to protect critical assets from flooding inundation based on facility evaluation.
- These can include: identifying critical outlets that are below potential flood inundation levels or potential water damage to automatic transfer switches; elevating other electrical equipment vulnerable to flood events; and, building flood control methods to modify runoff and manage stormwater through infrastructure or green infrastructure.
- Electrical equipment is vital to operating pumps and motors, treatment systems, water quality analyzers and monitors.

Applicable Hazards: Flood

Existing and Potential Resources: DWR Proposition 68

Target Completion Date: Depends on funding.

Additional Comments / Status Report: None

Mitigation Action #22	Not Funded

Project Description:
<u>CDMWTP Access Road Improvements</u>

- The access road to the CDMWTP is 1.25 miles long, with an average width of approximately 18' (about 119,000 square feet of pavement), and has been damaged over time through normal wear, weather, and other factors. Structural assessment of the main access road indicates that it has significant cracking. The access road also crosses McCoy Creek, which erodes and undercuts the road.
- This project would modify and raise the McCoy Creek crossing on the access road, and include other repairs. The access road is a short, low fair- weather creek crossing which can become flooded during heavy winter storm events and ensure that the road to CDMWTP remains accessible.

Applicable Hazards: Flood

Existing and Potential Resources: DWR Proposition 68

Target Completion Date: Depends on funding.

Additional Comments / Status Report: None

Mitigation Action #23	On Hold

Project Description:
Recycled Waterline Relocation at Goleta Beach State Park

- The District is in the processes of an alternatives design study to recommend strategies for relocating critical recycled water infrastructure to prevent damage from beach erosion as a result of storm surge or tsunami events.
- The recycled water mainline delivers 1,000 acre-feet per year of recycled water for the benefit of landscape irrigation and toilet flushing to customers including: the University of California Santa Barbara, large golf courses, and other commercial landscaped areas. Without recycled water, drinking water must be used, limiting the District's available potable water supply.

Applicable Hazards: Tsunami

Existing and Potential Resources: DWR Proposition 68

Target Completion Date: 2025

Additional Comments / Status Report: The District is in progress of conducting a relocation design alternatives study to recommend the most cost-effective, feasible solution for relocating the waterline. The estimated total cost is $1.7 million.

Mitigation Action #24	Not Funded

Project Description:
Backflow Prevention Program to prevent Water Contamination

- Installing additional backflow prevention assemblies in high fire risk areas reduces the chance of backflow contamination during emergencies. Backflow prevention assemblies are designed to prevent backflow of contaminants or pollutants from entering the distributions system from homes or commercial properties at the meter, where unsafe substances preside. Back siphonage occurs when the pressure drops and creates a vacuum that may pull unsafe substances into distribution system.
- Proactive backflow assembly installation could also be installed at critical customer connections, such as dialysis centers, day cares, hospitals and health facilities.

Applicable Hazards: Wildfire

Existing and Potential Resources: None

Target Completion Date: Depends on funding.

Additional Comments / Status Report: None

Mitigation Action #25	Not Funded

Project Description:
Remote Water Quality Sensors in the Distribution System

- The District is required to monitor water quality downstream of the treatment plant at designated sampling locations, including for pH, temperature, chlorine residual and conductivity.
- This project expands the District's water quality monitoring for remote areas of the distribution system, including areas where access is limited, where pipe or facilities failures may go unnoticed, or where increased monitoring of water quality would allow the District to respond quickly to changing water quality conditions.
- Currently, manual monitoring is performed by operator staff at 28 sites.
- Remote water quality monitoring allows for early detection of pipe failures, cross-connection contamination, and other unpredictable events in the distribution system.
- Post-emergency, remote water quality monitoring will also allow for targeted restoration to affected areas of the distribution system without the need to send operators to sample across the system. This significantly reduces response times after an emergency.

Applicable Hazards: Wildfire, Earthquake, Flood, Tsunami

Existing and Potential Resources: None

Target Completion Date: Depends on funding.

Additional Comments / Status Report: None

Mitigation Action #26	Not Funded

Project Description:
Groundwater Well Chemical Storage Tank Upsizing

- The District's groundwater wells each have on site chemical storage tanks for water treatment chlorination. The current sizing of chemical storage tanks allow for approximately two weeks of groundwater production.
- This project increases chemical storage at the wells to allow for increased groundwater production and treatment should there be an interruption in chemical deliveries caused by an emergency. Historical natural disasters in the community have closed area highways, delaying chemical deliveries and fuel deliveries, and disrupting access by District staff. This project will help maintain groundwater as a back-up supply to serve customers for extended periods during emergencies.

Applicable Hazards: Wildfire, Earthquake, Flood, Tsunami

Existing and Potential Resources: None

Target Completion Date: 2025

Additional Comments / Status Report: Professional groundwater analysis recommended upsizing chemical storage tanks at the District's nine groundwater well sites.

Mitigation Action #27	**Not Funded**
Project Description: Relocate 3,000 feet of 42" Transmission Main • Recent, shallow land sliding and ground movement have been observed along a 3,000 foot section of the District's 42 inch transmission main north of Van Horne Reservoir nearby Los Carneros Creek. The District's transmission main conveys water from the CDMWTP to a majority of the District's distribution system, excluding only the Ellwood Zone. A transmission main failure would force the District to either move water through the Ellwood Zone in a capacity limited to the 16" Ellwood Lateral and Edison Pressure Relief Valve, or shift to limited groundwater supplies with a capped production of 5.4 million gallons per day, less than the average winter indoor demand. • Professional geotechnical engineering review confirmed a high risk for future localized creep and land sliding to continue to occur. This project includes design and construction to relocate the transmission main to a corridor with less geologic hazards.	
Applicable Hazards: Earthquake	
Existing and Potential Resources: None	
Target Completion Date: 2025	
Additional Comments / Status Report: The District is monitoring the hillslope area and transmission main for changes in topography and related impacts.	

Integration (Element C6)

Plans for Integration (Element C6.a)

Hazard mitigation actions detailed in this plan may be incorporated into the District's Infrastructure Improvement Plan. Actions may also be incorporated into other local planning processes and documents, including the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan and the City of Goleta's Strategic Plan, Emergency Preparedness Plans, Drainage Improvement Plans, Climate Action Plan, Green Building Program and others. Many actions also meet the goals of United States Bureau of Reclamation (USBR) under the Drought Response Program.

Processes for Integration (Element C6.b)

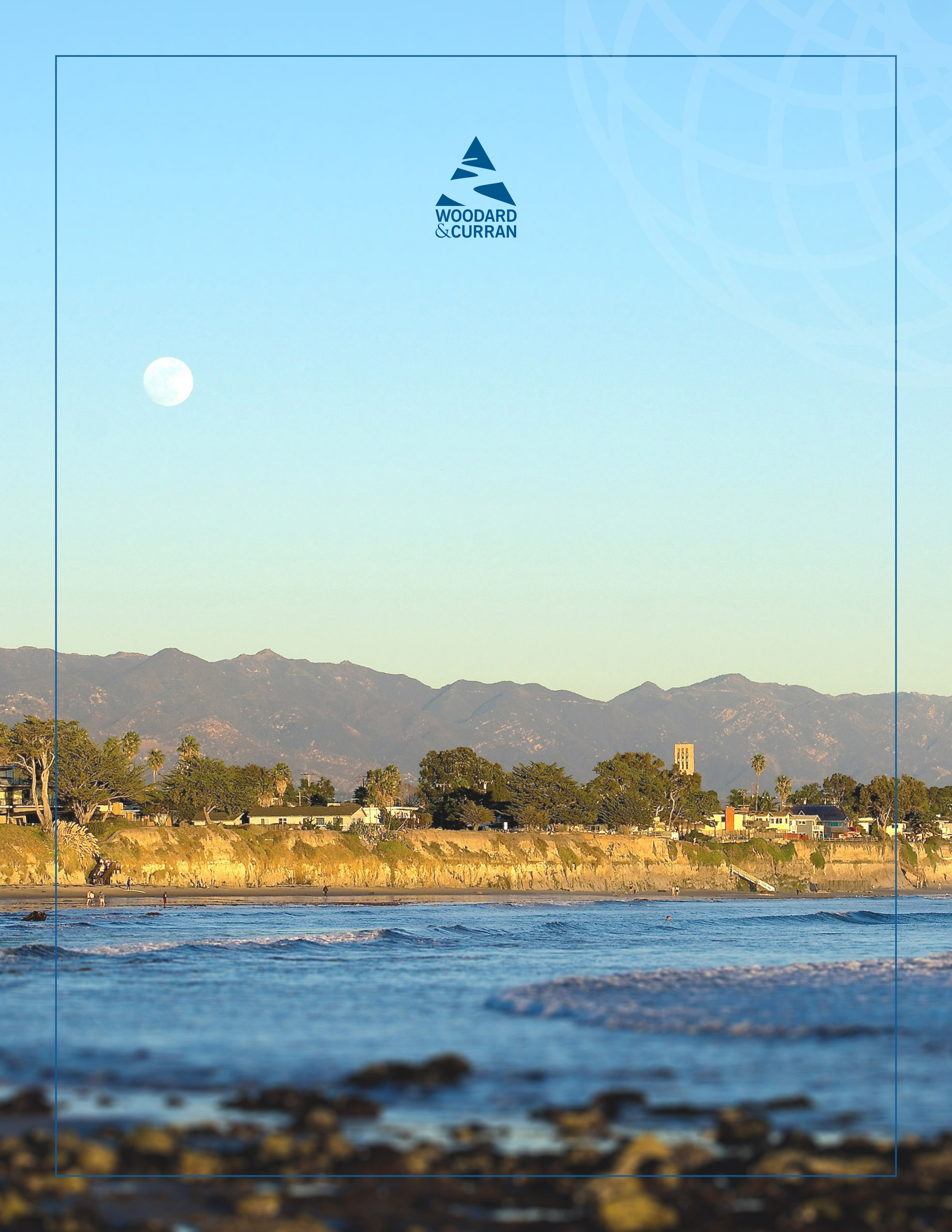
The District's process for integrating the data, information, and hazard goals and actions into other planning mechanisms may include adoption by the Board of Directors of the action into the District's Infrastructure Improvement Plans at one of its regularly scheduled and noticed Board meetings. The IIP is available to both the public and local planning agencies via the District's website.

Integration Effort (Element C6.b)

The District's Local Hazard Mitigation Plan Annex is expected to be incorporated and integrated into the Santa Barbara County Multi-Jurisdictional Natural Hazard Mitigation Plan.

Regulation (Element D2)

The District's Annex to the Santa Barbara County Multi-Jurisdictional Natural Hazard Mitigation Plan was developed in 2019 and will be updated as needed to reflect progress on local mitigation efforts.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